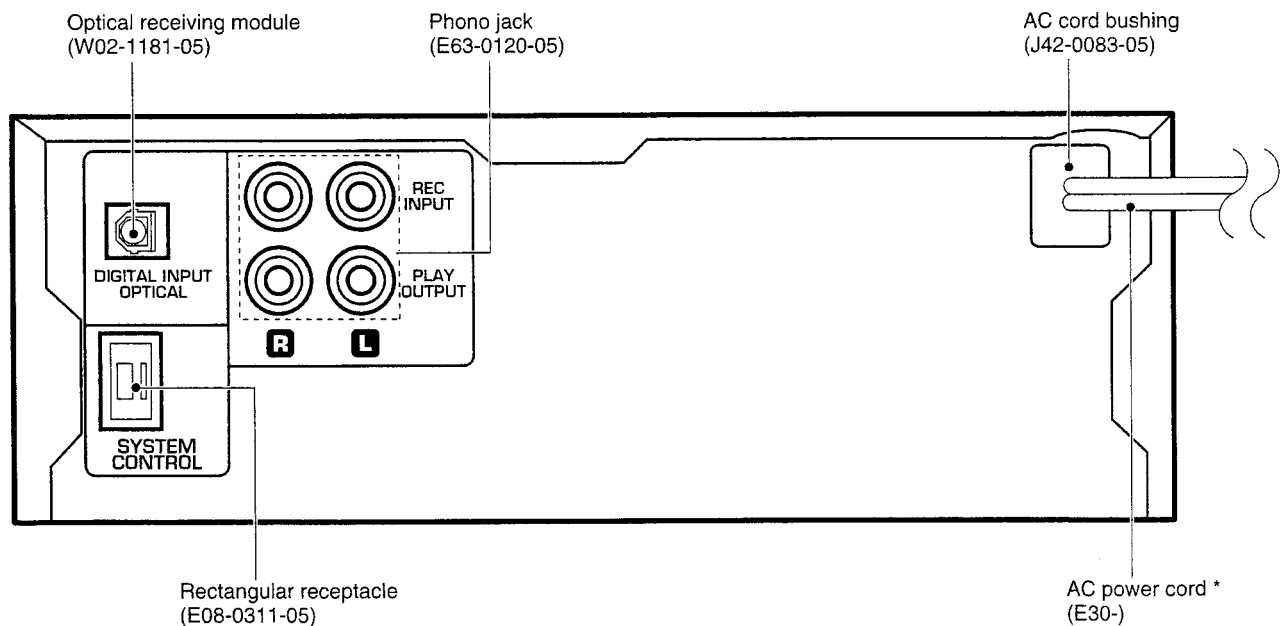
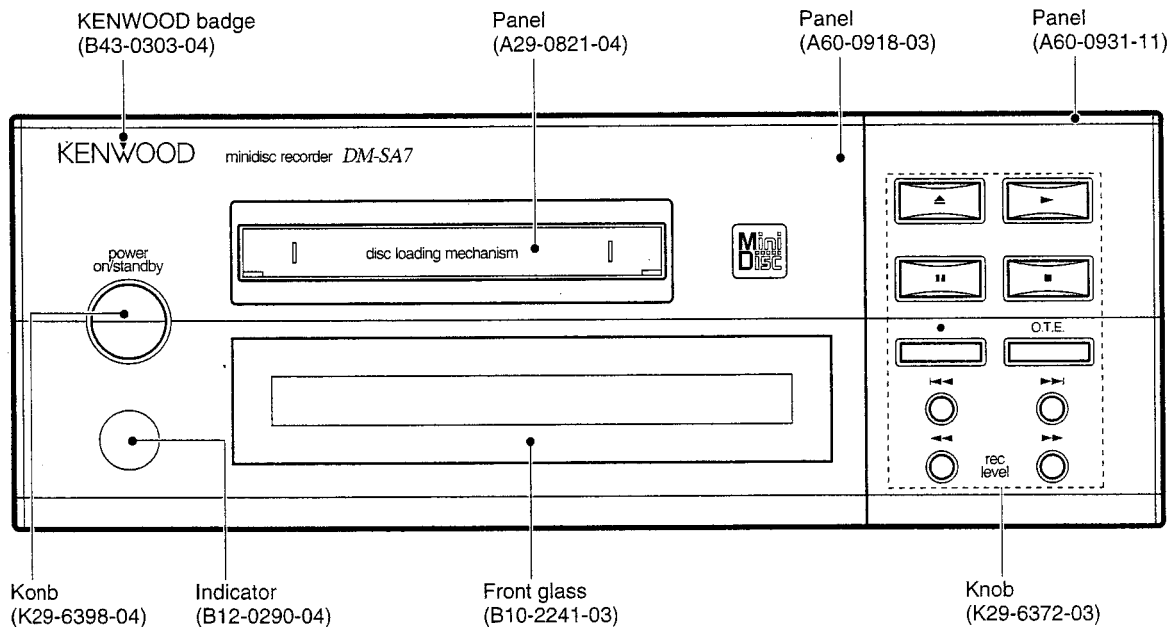


DM-SA7

SERVICE MANUAL



* Refer to parts list on page 30.



In compliance with Federal Regulations, following are reproductions of labels on, or inside the product relating to laser product safety. KENWOOD-Corp. certifies this equipment conforms to DHHS Regulations No. 21 CFR 1040. 10, Chapter 1, Subchapter J.

DANGER : Laser radiation when open and interlock defeated.
AVOID DIRECT EXPOSURE TO BEAM.

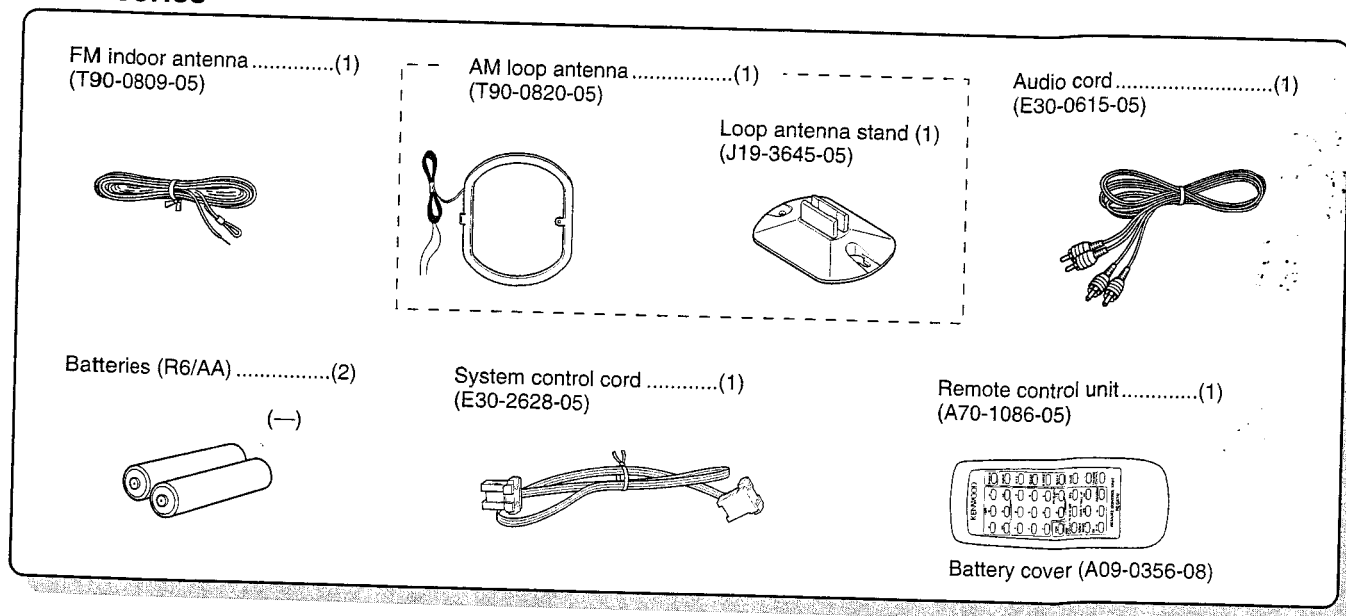
DM-SA7

CONTENTS / ACCESSORIES / CAUTIONS

Contents

CONTENTS / ACCESSORIES / CAUTIONS	2	SCHEMATIC DIAGRAM	18
BLOCK DIAGRAM	3	EXPLODED VIEW	29
CIRCUIT DESCRIPTION	4	PARTS LIST	30
MECHANISM OPERATION	11	SPECIFICATIONS	35
PC BOARD	13		

Accessories



Cautions

Note related to transportation and movement

Before transporting or moving this unit, carry out the following operations.

1. With no disc loaded in the unit, press the MAIN POWER key to ON.
 - Check that no disc is present in the unit.
2. Wait a few seconds and verify that the display shown appears.
3. Press the MAIN POWER key to OFF.

NO DISC

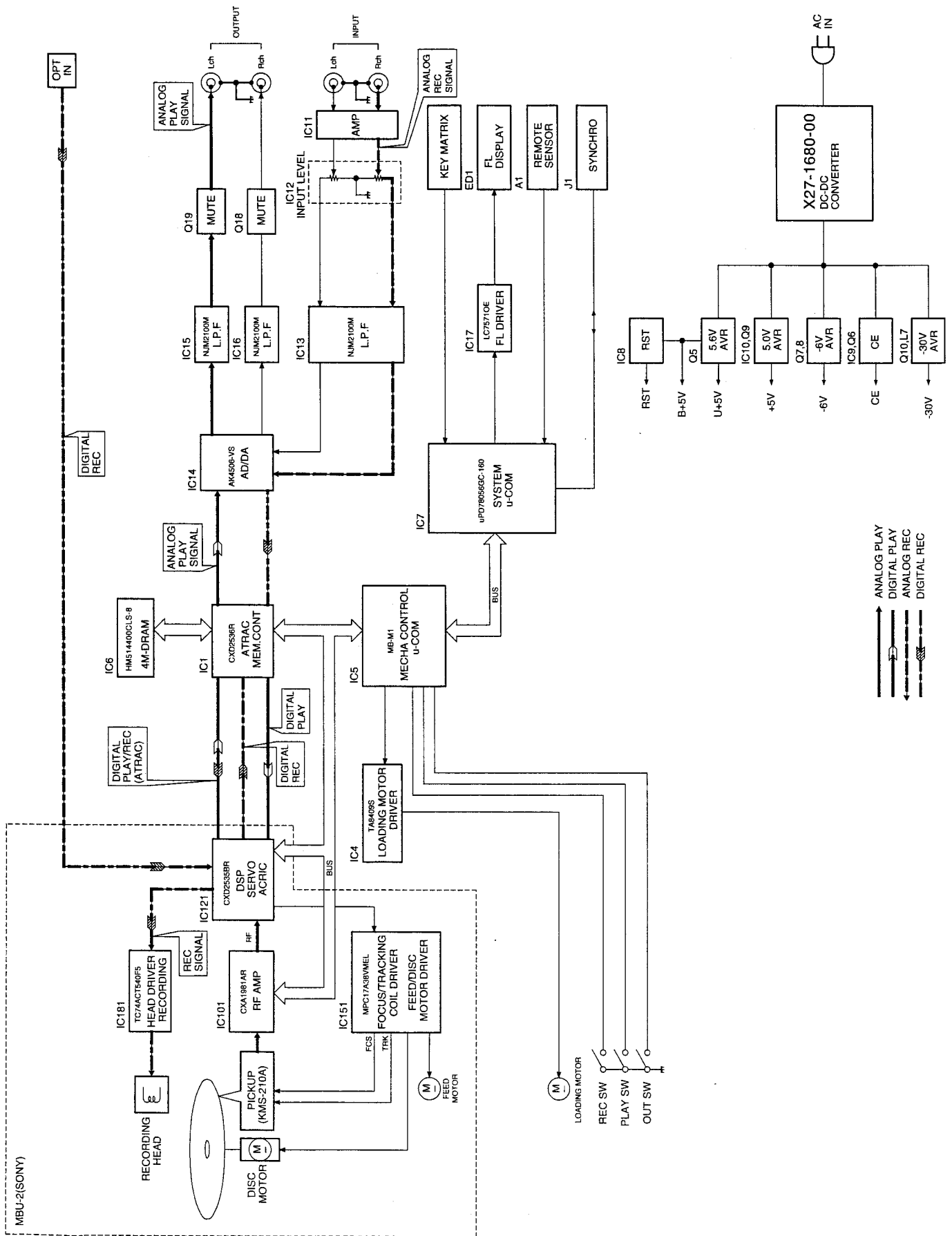
Beware of condensation

When water vapor comes into contact with the surface of cold material, water drops are produced. If condensation occurs, correct operation may not be possible, or the unit may not function correctly. This is not a malfunction, however, and the unit should be dried. (To do this, turn the POWER switch ON and leave the unit for several hours.)

Be especially careful in the following conditions:

- When the unit is brought from a cold place to a warm place, and there is a large temperature difference.
- When a heater starts operating.
- When the unit is brought from an air-conditioned place to a place of high temperature with high humidity.
- When there is a large difference between the internal temperature of the unit and the ambient temperature, or in conditions where condensation occurs easily.

BLOCK DIAGRAM



DM-SA7

CIRCUIT DESCRIPTION

1. Test mode

1-1. Setting the test mode

While pressing the PAUSE (II) key, plug the AC power cord to the power outlet.

1-2. Canceling the test mode

Unplug the AC power cord.

1-3. Basic operation in test mode

All operations are performed using the ◀◀ key, ▶▶ key, ENTER key, and ERASE key. The functions of each key are shown in the table below.

Function	Description
◀◀ or ▶▶ key	Changes the parameter and mode.
ENTER key	Proceeds for definition.
ERASE key	Returns for interrupt.

1-4. Selection of test mode

Eight test modes are selected by pressing the ◀◀ or ▶▶ key.

Display	Description	Section
TEMP ADJUST	Temperature compensation offset adjustment	2-5
LDPWR ADJUST	Laser power adjustment	2-6
EFBAL ADJUST	Traverse adjustment	2-7
FBIAS ADJUST	Focus bias adjustment	2-8
FBIAS CHECK	Focus bias confirmation	2-10
CPLAY MODE	Continuous playback mode	1-4-1
CREC MODE	Continuous recording mode	1-4-2
EEP MODE	Nonvolatile memory mode *	1-4-3

For more information on each adjustment mode, refer to each section of 2, "Electrical adjustment".

If other adjustment mode has been entered incorrectly, press the STOP key to exit the mode.

* The EEP mode is not used for service. If this EEP mode has been entered incorrectly, press the STOP key immediately to exit the mode.

1-4-1. Operation in continuous playback mode

1. Entering the continuous playback mode

- (1) Insert a recordable disc or compact disc (CD) into the unit.
- (2) Press the ◀◀ or ▶▶ key to display "CPLAY MODE".
- (3) Press the PLAY key. The display then changes from "CPLAY MODE" to "CPLAY IN".
- (4) After the access operation is completed, the display changes from "CPLAY IN" to "CPLAY(####)".

2. Change the playback point.

- (1) Press the PLAY key during continuous playback. The display then changes to "CPLAY MID" and "CPLAY OUT". Press the PLAY key while "CPLAY MID" and "CPLAY OUT" are displayed. Moreover, the playback point can be shifted.

- (2) After the access operation is completed, the display changes from "CPLAY MID" and "CPLAY OUT" to "CPLAY(####)".

3. Terminating the continuous playback mode

- (1) Press the STOP key. The display then changes to "CPLAY MODE".
- (2) Press the EJECT key to take out the disc.

Note : The playback start addresses of IN, MID, and OUT are described below.

IN	40H cluster
MID	300H cluster
OUT	700H cluster

1-4-2. Operation in continuous recording mode

1. Entering the continuous recording mode

- (1) Insert a recordable disc into the unit.
- (2) Press the ◀◀ or ▶▶ key to display "CREC MODE".
- (3) Press the PLAY key. The display then changes from "CREC MODE" to "CREC IN".
- (4) After the access operation is completed, the display changes from "CREC IN" to "CREC(####)". The REC display then lights.

2. Change the recording point.

- (1) Press the PLAY key during continuous recording. The display then changes to "CREC MID" and "CPLAY OUT" and the REC display goes off. Press the ENTER key while "CREC MID" and "CPLAY OUT" are displayed. Moreover, the recording point can be shifted.

- (2) After the access operation is completed, the display changes from "CREC MID" and "CPLAY OUT" to "CREC(####)" and the REC display lights.

3. Terminating the continuous recording mode

- (1) Press the STOP key. The display then changes to "CREC MODE" and the REC display goes off.
- (2) Press the EJECT key to take out the disc.

Notes :

1. The recording start addresses of IN, MID, and OUT are described below.

IN	40H cluster
MID	300H cluster
OUT	700H cluster

2. The STOP key can be pressed at any time to stop the recording.

3. An erasure prevention control is not detected in the test mode. Be careful not to enter the continuous recording mode using a disc containing the data that should not be erased.

4. Do not record continuously for more than five minutes.

5. Take care that no vibration is applied during continuous recording.

Note : The "#" display on the screen indicates an arbitrary figure.

CIRCUIT DESCRIPTION

1-4-3. Nonvolatile memory mode

The nonvolatile memory mode is used to read or write the contents of nonvolatile memory. This mode is not used for service. If this mode has been entered incorrectly, press the STOP key immediately to exit this mode.

1-5. Other key functions

Function	Description
▶	Plays back continuously when this key is pressed during stop. Turns on and off the tracking servo when it is pressed during continuous playback.
■	Stops the continuous playback and recording.
▶▶	The thread moves to the outer circumference while this key is pressed.
◀◀	The thread moves to the inner circumference while this key is pressed.
●	Turns on and off the recording when this key is pressed during continuous playback.
TITLE SEARCH	Selects the mode for the pit and groove every time this key is pressed.
TITLE INPUT	Selects the spindle servo mode. (CLV-S and CLV-A)
O.T.E	Selects the figure of the display every time this key is pressed.

Note : An erasure prevention control is not detected in the test mode. Notice that recording is performed irrespective of the erasure prevention control position when the REC key is pressed.

1-6. Display in test mode

The display is selected in the order of MODE display, error rate display, and address display every time the DISPLAY MODE key is pressed.

1. MODE display

"TEMP ADJUST" and "CPLAY MODE" are displayed as the MODE display.

2. Address display

The address display appears as described below.

h = ##### s = ##### (Recordable disc and pre-mastered disc)

h = ##### = ##### (Recordable groove)

h = Header address, s = SUBQ address, a = ADIP address

* When no address can be read, "-" display appears.

3. Error rate display

The error rate display appears as described below.

C1 = ##### AD = #####

C1 = C1 error, AD = ADER

1-7. Other displays

Display	Description	
	Lights	Goes off
▶	Continuous playback	Stop
⏏	Tracking servo OFF	Tracking servo ON
REC	Recording mode ON	Recording mode OFF
DIGITAL	CVL LOCK	CLV UNLOCK
SINGLE	Pit	Groove
SEARCH	High reflection	Low reflection
TITLE	CLV-S	CLV-A
PGM	ABCD-adjusted	
MONITOR	(Focus automatic gain succeed.) (Focus tracking automatic gain succeed.)	(Focus automatic gain succeed.) (Tracking automatic gain fails.)

Note : The "#" display on the screen indicates an arbitrary figure.

CIRCUIT DESCRIPTION

1-8. Precaution on use of test mode

- 1) The loading-related operation is performed independently of the operation in the test mode. Therefore, eject or insert the disc after confirming that the operation of a disc stopped. The disc rotation will not stop even if the EJECT key is pressed while a disc is rotating during continuous playback and recording. The disc is ejected while rotating. Be sure to press the STOP key, then EJECT key.
- 2) An erasure prevention control is not detected in the test mode. Therefore, when the recording laser power mode such as continuous recording mode and traverse adjustment mode is entered, the contents of the existing recording are erased irrespective of the control position. Be careful not to enter the continuous recording mode and traverse adjustment mode when using a disc, containing the data that should not be erased, in the test mode.

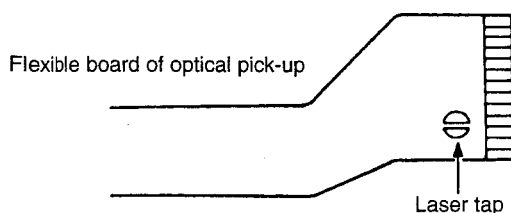
2. Electrical adjustment

2-1. Precaution during confirmation of Laser Diode emission

During adjustment, do not view the emission of a laser diode from just above for confirmation. This may damage your eyes.

2-2. Precaution on handling of Optical pick-up (KMS-210A)

The laser diode in an optical pick-up is easy to be subject to electrostatic destruction. Therefore, solder-bridge the laser tap on the flexible board when handling the optical pick-up. When removing the flexible board from the connector, make a solder bridge in advance, then remove the board. Be careful not to remove the solder bridge before inserting the connector. Moreover, take careful measures against electrostatic destruction. The flexible board is cut easily. Handle the flexible board with care.



2-3. Precaution during adjustment

- 1) Perform the adjustment and confirmation marked with "O" in the order shown in the table when the parts below are replaced.

	Optical pick-up	BD board			
		IC171	D101	IC101, IC121, IC191	
1. Temperature compensation offset adjustment	X	O	O	O	
2. Laser power adjustment	O	X	X	O	
3. Traverse adjustment	O	O	X	O	
4. Focus bias adjustment	O	O	X	O	
5. Error rate confirmation	O	O	X	O	

- 2) In the test mode, perform the adjustment. After adjustment is completed, cancel the test mode.
- 3) Perform the adjustment in the order described.
- 4) Use the following tools and measurement equipment.
 - CD test disc TDYS-1
 - Laser power meter
 - Oscilloscope (with bandwidth of more than 40 MHz) (Calibrate the probe before measurement.)
 - Digital voltmeter
 - Thermometer
- 5) Take care that VC and GND (ground) are not connected on the oscilloscope when two or more signals are monitored on the oscilloscope. (VC and GND are short-circuited in this case.)
- 6) Do not move VR105 on the BD board. If VR105 is replaced, set new VR105 to the mechanical center position of a semi-fixed resistor.

2-4. Creating the recordable continuous recording disc

This disc is used for focus bias adjustment and error rate confirmation. How to create the recordable continuous recording disc is described below.

1. Insert a commercial recordable disc (blank disc).
2. Press the ◀◀ or ▶▶ key to display "CREC MODE."
3. Press the PLAY key to display "CREC IN".
4. Press the PLAY key again to display "CREC-MID". "CREC(0300)" is displayed momentarily and the recording is initiated.
5. Terminate the recording within five minutes.
6. Press the STOP key to stop the recording.
7. Press the EJECT key to take out the recordable disc.

As a result, a continuously recorded disc can be created for focus bias adjustment and error rate confirmation.

Note : Take care that no vibration is applied during continuous recording.

2-5. Temperature compensation offset adjustment

The temperature data at that time is saved in nonvolatile memory as reference data at 25°C.

Notes :

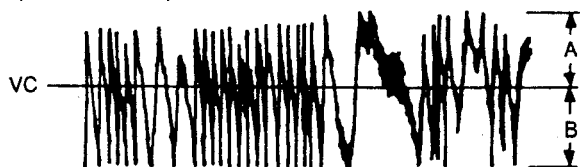
1. Usually, do not perform this adjustment.
2. The ambient temperature when performing this adjustment is 22°C to 28°C. Perform this adjustment immediately after the power is turned on when the internal temperature of the unit is the same as the ambient temperature.
3. After the replacement of D101, perform this adjustment when the temperature of parts reaches the ambient temperature.

Note :

1. The "#" display on the screen indicates an arbitrary figure.
2. "VR###" printed on Schematic diagram and Parts list, through "RV###" printed on PCB.

CIRCUIT DESCRIPTION

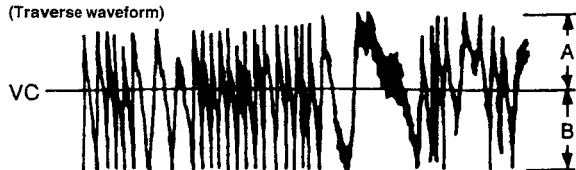
(Traverse waveform)



Specification : A = B

9. Press the PLAY key to display "EFB=\$#SAVE" momentarily and save the adjustment result in nonvolatile memory. After that, "EFBAL MO-P" is displayed.
10. Press the PLAY key to display "EFB=\$#MO-P". The optical pick-up automatically moves to the area of the pit block to establish a servo. (The display may require much time for its change or may not change. However, proceed to the next adjustment because adjustment is possible.)
11. Press the ◀◀ or ▶▶ key so that the waveform on the oscilloscope comes near to the specified value. During this adjustment, the waveform changes in units of about 3%. Adjust so that the waveform comes nearest to the specified value.

(Traverse waveform)



Specification : A = B

12. Press the PLAY key to display "EFB=\$#SAVE" momentarily and save the adjustment result in nonvolatile memory. After that, "EFBAL CD" is displayed. The disc rotation stops automatically.
13. Press the EJECT key to take out a recordable disc.
14. Insert test disc TDYS-1.
15. Press the PLAY key to display "EFB=\$#CD". A servo is established automatically.
16. Press the ◀◀ or ▶▶ key so that the waveform on the oscilloscope comes near to the specified value. During this adjustment, the waveform changes in units of about 3%. Adjust so that the waveform comes nearest to the specified value.

(Traverse waveform)

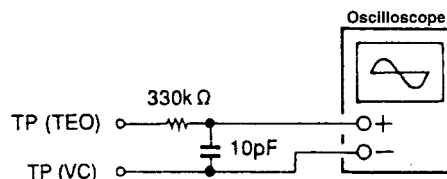


Specification : A = B

17. Press the PLAY key to display "EFB=\$#SAVE" momentarily and save the adjustment result in nonvolatile memory. After that, "EFBAL ADJUST" is displayed.
18. Press the EJECT key to take out test disc TDYS-1.

Notes :

1. Data is erased during MO write when a recorded disc is used for this adjustment.
2. If the traverse waveform is difficult to be monitored, connect an oscilloscope as shown in the figure below.



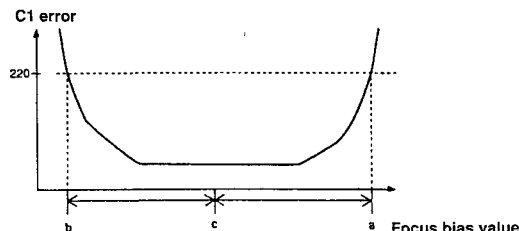
2-8. Focus bias adjustment

Connection :

1. Insert a continuously recorded disc (refer to 2-4, "Creating the recordable continuous recording disc").
2. Press the ◀◀ or ▶▶ key to display "CPLAY MODE".
3. Press the PLAY key two times to display "CPLAY MID".
4. Press the DISPLAY MODE key two times. Press the ERASE key when "CPLAY(030#)" is displayed.
5. Press the ◀◀ or ▶▶ key to display "FBIAS ADJUST".
6. Press the PLAY key to display "####/#a=##". The first four-digit figure indicates the C1 error rate, the two-digit figure after "/" indicates ADER, and the two-digit figure after "a=" indicates the focus bias value.
7. Press the ▶▶ key and detect the focus bias value in which the C1 error rate becomes 220.
8. Press the PLAY key to display "####/#b=##".
9. Press the ◀◀ key and detect the focus bias value in which the C1 error rate becomes 220.
10. Press the PLAY key to display "####/#c=##".
11. Confirm that the C1 error rate at that time is less than 50 and that ADER is 00, then press the ENTER key.
12. If the value indicated by "(##)" in the "##-##-##(##)" display is more than 20, press the PLAY key. If it is less than 20, press the STOP key and readjust steps 2 and later.
13. Press the EJECT key to take out a continuous recording disc.

Notes :

1. The relation between the C1 error and focus bias value is shown in the figure below. Points "a" and "b" in the figure are detected by the above adjustment. Focal position "C" is automatically obtained from points "a" and "b" by calculation.
2. The C1 error rate fluctuates. Therefore, perform the adjustment according to the observed mean value.



Note : The "#" display on the screen indicates an arbitrary figure.

CIRCUIT DESCRIPTION

2-9. Error rate confirmation

2-9-1. CD error rate confirmation

Confirmation :

1. Insert test disc TDYS-1.
2. Press the ◀◀ or ▶▶ key to display "CPLAY MODE".
3. Press the PLAY key two times to display "CPLAY MID".
4. "C1=####AD=##" is displayed.
5. Confirm that the C1 error rate is less than 20.
6. Press the STOP key to stop the playback, then press the EJECT key to take out a test disc.

2-9-2. MO error rate confirmation

Confirmation :

1. Insert a continuously recorded disc (refer to 2-4, "Creating the recordable continuous recording disc").
2. Press the ◀◀ or ▶▶ key to display "CPLAY MODE".
3. Press the PLAY key two times to display "CPLAY MID".
4. "C1=####AD=##" is displayed.
5. Confirm that the C1 error rate is less than 50 and that ADER is 00.
6. Press the STOP key to stop the playback, then press the EJECT key to take out a continuous recording disc.

2-10. Focus bias confirmation

Change the focus bias value and check the focus tolerance value.

Confirmation :

1. Insert a continuously recorded disc (refer to 2-4, "Creating the recordable continuous recording disc").
2. Press the ◀◀ or ▶▶ key to display "CPLAY MODE".
3. Press the PLAY key two times to display "CPLAY MID".
4. Press the DISPLAY MODE key two times, then press the STOP key when "CPLAY(030#)" is displayed.
5. Press the ◀◀ or ▶▶ key to display "FBIAS CHECK".
6. Press the PLAY key to display "####/#c=##". The first four-digit figure indicates the C1 error rate, the two-digit figure after "/" indicates ADER, and the two-digit figure after "c=" indicates the focus bias value. At that time, confirm that the C1 error rate is less than 50 and that ADER is 00.
7. Press the PLAY key. The display then changes to "####/#b=##". At that time, confirm that the C1 error rate does not become less than 220 and that ADER does not always become more than 00.
8. Press the PLAY key. The display then changes to "####/#a=##". At that time, confirm that the C1 error rate does not become less than 220 and that ADER does not always become more than 00.
9. Press the STOP key, then press the EJECT key to take out a continuously recorded disc.

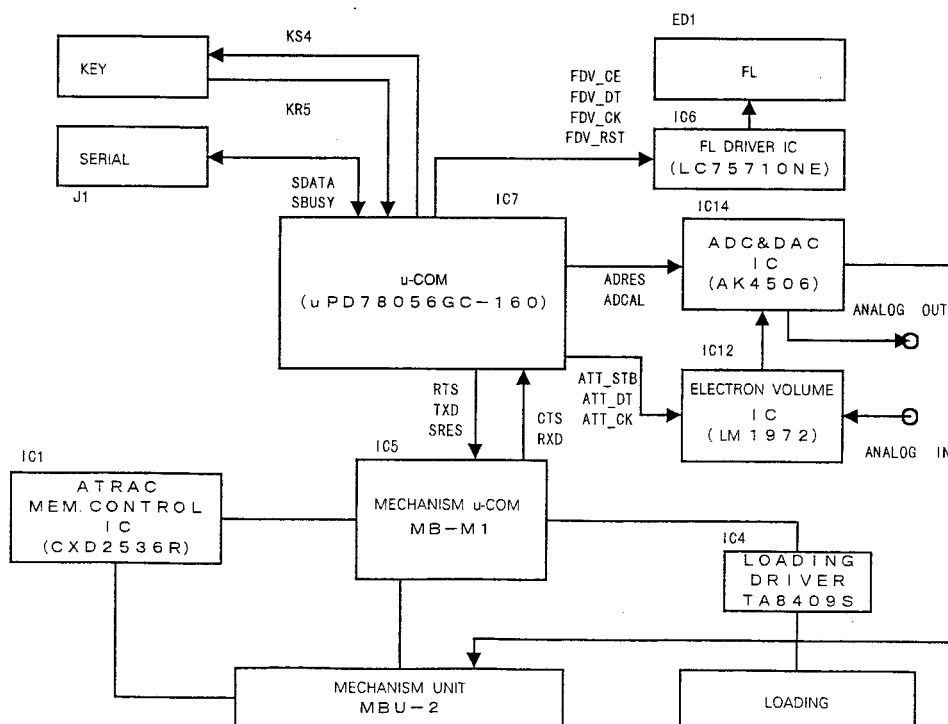
Note :

If the C1 error rate or ADER at only point "a" or "b" is more than 00, the focus bias may have been adjusted incorrectly. In this case, readjust the focus bias.

Note : The "#" display on the screen indicates an arbitrary figure.

3. Microprocessor : UPD78056GC-160 (X33, IC3)

3-1. Block diagram



CIRCUIT DESCRIPTION

4-2. Pin description

Pin No.	Pin Name	I/O	Description
1	ADCAL	O	DAC A/D CALIBRATION H : A/D ON / L : A/D OFF
2	ADRES	O	DAC A/D RESET H : / L : A/D RESET
3	—	—	Not used
4	AVss	—	A/D power supply GND
5	CTS	I	UART CTS H : UART OUT DISABLE L : UART OUT ENABLE
6	RTS	O	UART RTS H : UART IN DISABLE L : UART IN ENABLE
7	AVref1	—	D/A reference voltage +5V
8	RXD	I	UART RXD UART IN DATA
9	TXD	O	UART TXD UART OUT DATA
10	—	—	Not used
11	ATT_STB	O	VOLUME IC STB LM1972 STB
12	ATT_DT	O	VOLUME IC DT LM1972 DATA
13	ATT_CK	O	VOLUME IC CK LM1972 CLOCK
14	—	—	Not used
15	FDV_RDT	O	FL driver reset LC75710E RESET H : POWER ON
16	FDV_CE	O	FL driver CE LC75710E CE
17	FDV_DT	O	FL driver DT LC75710E DATA
18	FDV_CK	O	FL driver CK LC75710E CLOCK
19 ~ 32	—	—	Not used
33	Vss	—	u-COM power supply GND
34 ~ 42	—	—	Not used
43	INISYNC	I	LEVEL SYNC INITIAL SWITCH H : THRESHOLD = -45 [db] L : THRESHOLD = -50 [db]
44	INISW	I	INITIAL SWITCH H : OVER SEAS L : JAPAN
45	—	—	Not used
46	SDATA	I/O	16bit serial DATA
47	SBUSY	I/O	16bit serial BUSY
48	KS0 ~ KS3	O	Key scan 0 ~ 3
52	KR0 ~ KR5	I	Key return 0 ~ 5
58,59	—	—	Not used
60	RESET	I	u-COM reset Hard reset
61	REMOCON	I	Remo-con receive
62 ~ 66	—	—	Not used
67	CE	I	u-COM CE
68	Vdd	—	u-COM power supply Vdd
69	X2	—	Oscillator (5MHz)
70	X1	I	Oscillator (5MHz)
71	IC	—	IC terminal GND
72	XT2	—	Not used OPEN
73	XT1	I	Not used GND
74	AVdd	—	A/D power supply Vdd
75	AVref0	I	A/D reference voltage +5V
76 ~ 78	—	—	Not used
79	HRES	O	Mechanism u-COM hardware reset H : L : Mechanism u-COM reset
80	SRES	O	Mechanism u-COM software reset H : L : Mechanism u-COM POWER DOWN

3-3. Initialization

1. Initialization of microcomputer

A microcomputer is initialized for start when the AC power is turned on while pressing the ENTER key. At that time, a SONY mechanical microcomputer is also initialized. When the microcomputer is initialized with the disc inserted, the disc is ejected. Therefore, the UTOC information that was recorded lastly is erased (the last disc write state is returned).

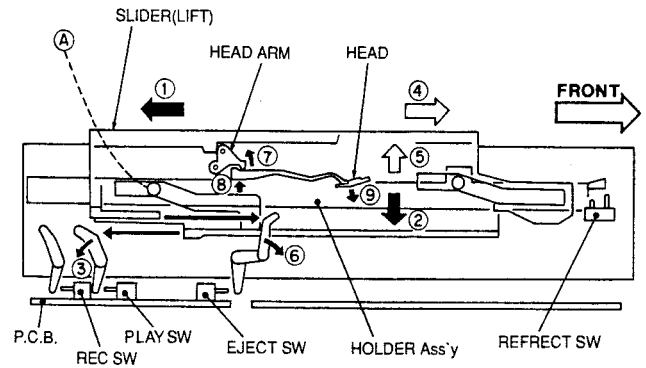
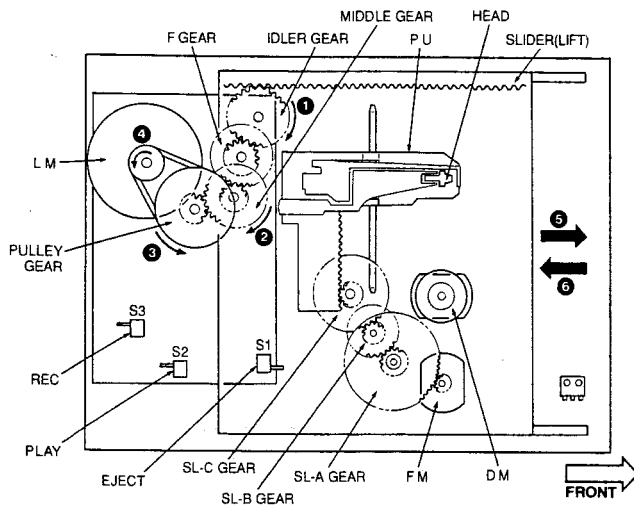
2. Software reset

A software reset is established when the REPEAT key is pressed for three seconds during the normal power-on sequence. Since the MD of this time is constituted by communication based on two microcomputers, any key may not be able to be accepted due to communication faults. The communication at that time can be initialized. In this case, the UTOC information in a disc is maintained.

3. Hardware reset

A hardware reset is established when the AUTO/MANUAL key is pressed for five seconds during the normal power-on sequence. Since the MD of this time is constituted by communication based on two microcomputers, any key may not be able to be accepted due to communication faults. The communication at that time can be initialized. In this case, the microcomputer is completely initialized, so the UTOC information in a disc is cleared.

MECHANISM OPERATION



1. EJECT

1. Shaft of loading motor (LM) turns counter clock wise (1) and pulley gear turns same direction (3).
2. Middle gear turns clock wise (2) and idle gear turns same direction .
3. Slider-lift moves front wards (5) by turning of idle gear (1)
4. Eject arm pushes eject switch (6) by moving of slider-lift front (4) wards.
5. LM stops to turn.

2. LOADING

1. Eject switch releases by sliding of slider-lift (1) backwards.
2. LM turns clock wise. Idler and middle gears turn counter clock wise, and pulley gear does clock wise. Slider-lift moves backwards (3).
3. Sloder-lift and holder assy move backwards (1).
4. Holder assy moves downwards by groove of slider and boss(A) of holder assy.
5. play switch works by play arm (3) and moving of slider-lift backwards.
6. LM and slider-lift stops to work.

3. RECORDING

1. LM turns more clock wise and slider-lift moves back-wards more.
2. Head of pickup moves downwards (3, 9) by release of head arm (2) and moving of slider-lift backwards (1).
3. Rec switch works(play switch keeps on) by being pushed rec arm and moving of slider-lift backwards more.
4. LM and slider stops to work.

4. SWITCH FUNCTION

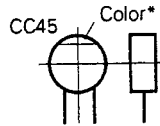
Ref. No.	SW NAME	ON (SW : LOW)
S1	EJECT SW	EJECT OK
S2	PLAY SW	PLAY OK
S3	REC SW	REC OK
S101	LIMIT SW	PICKUP FULL INSIDE
S102-1	PROTECT SW	PROTECT
S102-2	REFLECT SW	RECORDABLE DISC

PARTS DESCRIPTIONS

CAPACITORS

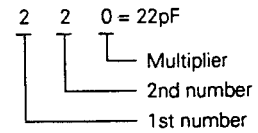
CC 45 TH 1H 220 J
1 2 3 4 5 6

- 1 = Type ... ceramic, electrolytic, etc. 4 = Voltage rating
2 = Shape ... round, square, ect. 5 = Value
3 = Temp. coefficient 6 = Tolerance



• Capacitor value

- 010 = 1pF
100 = 10pF
101 = 100pF
102 = 1000pF = 0.001μF
103 = 0.01μF



• Temperature coefficient

1st Word	C	L	P	R	S	T	U
Color*	Black	Red	Orange	Yellow	Green	Blue	Violet
ppm/°C	0	-80	-150	-220	-330	-470	-750

2nd Word	G	H	J	K	L
ppm/°C	±30	±60	±120	±250	±500

Example : CC45TH = -470 ± 60ppm/°C

• Tolerance (More than 10pF)

Code	C	D	G	J	K	M	X	Z	P	No code
(%)	±0.25	±0.5	±2	±5	±10	±20	+40 -20	+80 -20	+100 -0	More than 10μF -10 ~ +50 Less than 4.7μF -10 ~ +75

(Less than 10pF)

Code	B	C	D	F	G
(pF)	±0.1	±0.25	±0.5	±1	±2

• Voltage rating

2nd word	A	B	C	D	E	F	G	H	J	K	V
1st word											
0	1.0	1.25	1.6	2.0	2.5	3.15	4.0	5.0	6.3	8.0	-
1	10	12.5	16	20	25	31.5	40	50	63	80	35
2	100	125	160	200	250	315	400	500	630	800	-
3	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	-

• Chip capacitors

(EX) C C 7 3 F S L 1 H 0 0 0 J
1 2 3 4 5 6 7

(Chip) (CH, RH, UJ, SL)

(EX) C K 7 3 F F 1 H 0 0 0 Z
1 2 3 4 5 6 7

(Chip) (B, F)

Refer to the table above.

1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Voltage rating
6 = Value
7 = Tolerance

Dimension (Chip capacitors)

Dimension code	L	W	T
Empty	5.6 ± 0.5	5.0 ± 0.5	Less than 2.0
A	4.5 ± 0.5	3.2 ± 0.4	Less than 2.0
B	4.5 ± 0.5	2.0 ± 0.3	Less than 2.0
C	4.5 ± 0.5	1.25 ± 0.2	Less than 1.25
D	3.2 ± 0.4	2.5 ± 0.3	Less than 1.5
E	3.2 ± 0.2	1.6 ± 0.2	Less than 1.25
F	2.0 ± 0.3	1.25 ± 0.2	Less than 1.25
G	1.6 ± 0.2	0.8 ± 0.2	Less than 1.0

RESISTORS

• Chip resistor (Carbon)

(EX) R K 7 3 E B 2 B 0 0 0 J
1 2 3 4 5 6 7

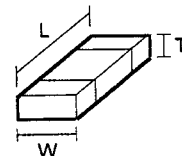
(Chip) (B, F)

• Carbon resistor (Normal type)

(EX) R D 1 4 B B 2 C 0 0 0 J
1 2 3 4 5 6 7

- 1 = Type 5 = Rating wattage
2 = Shape 6 = Value
3 = Dimension 7 = Tolerance
4 = Temp. coefficient

Dimension



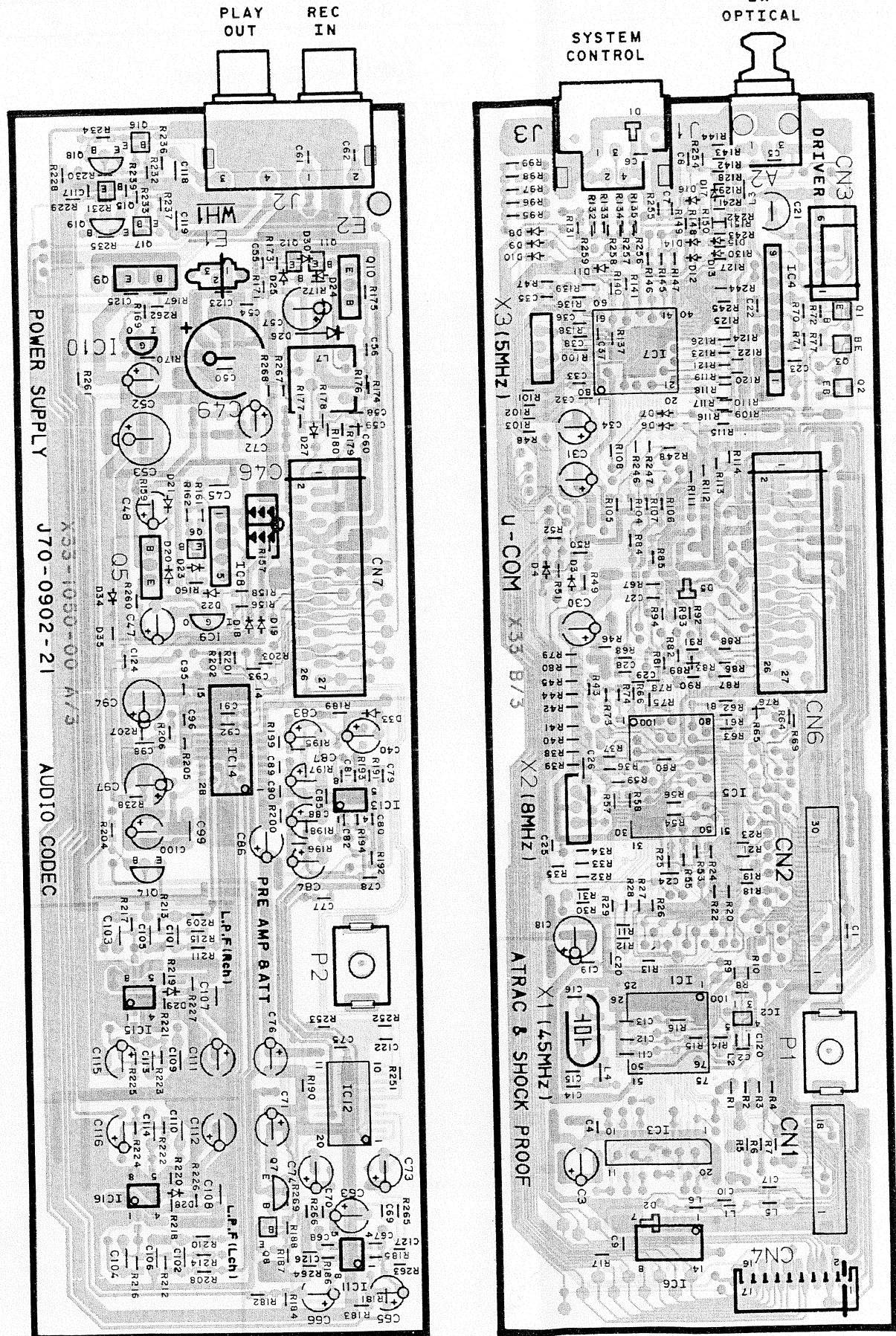
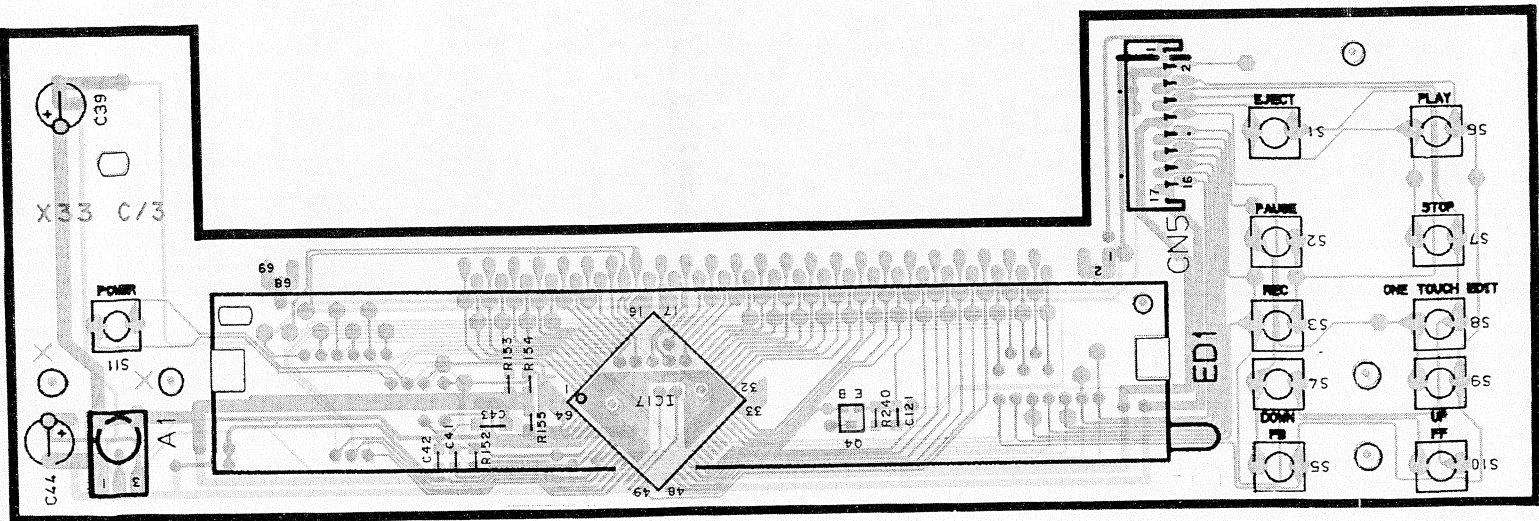
Dimension (Chip resistor)

Dimension code	L	W	T
E	3.2 ± 0.2	1.6 ± 0.2	1.0
F	2.0 ± 0.3	1.25 ± 0.2	1.0
G	1.6 ± 0.2	0.8 ± 0.2	0.5 ± 0.1

Rating wattage

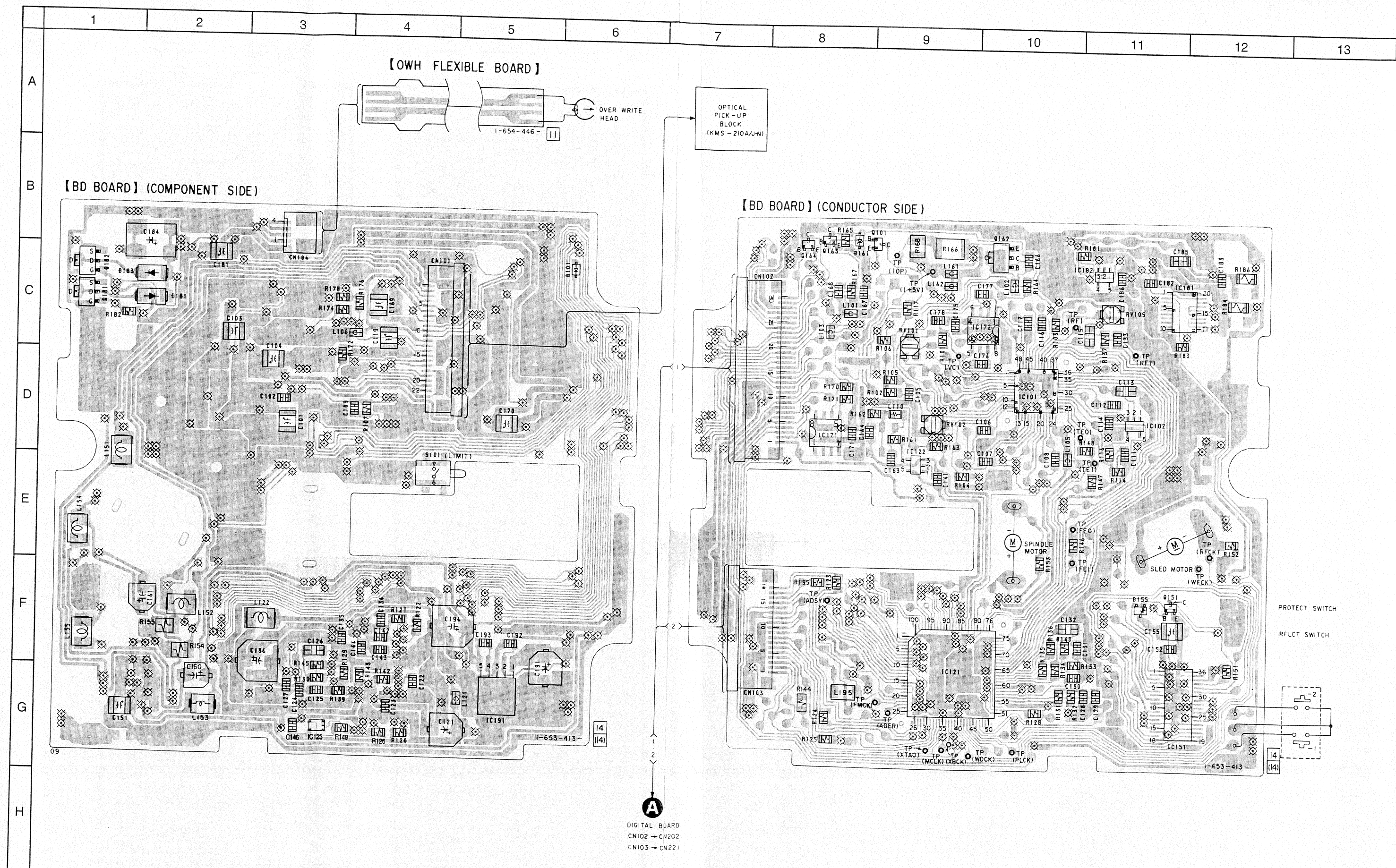
Code	Wattage	Code	Wattage	Code	Wattage
1J	1/16W	2C	1/6W	3A	1W
2A	1/10W	2E	1/4W	3D	2W
2B	1/8W	2H	1/2W		

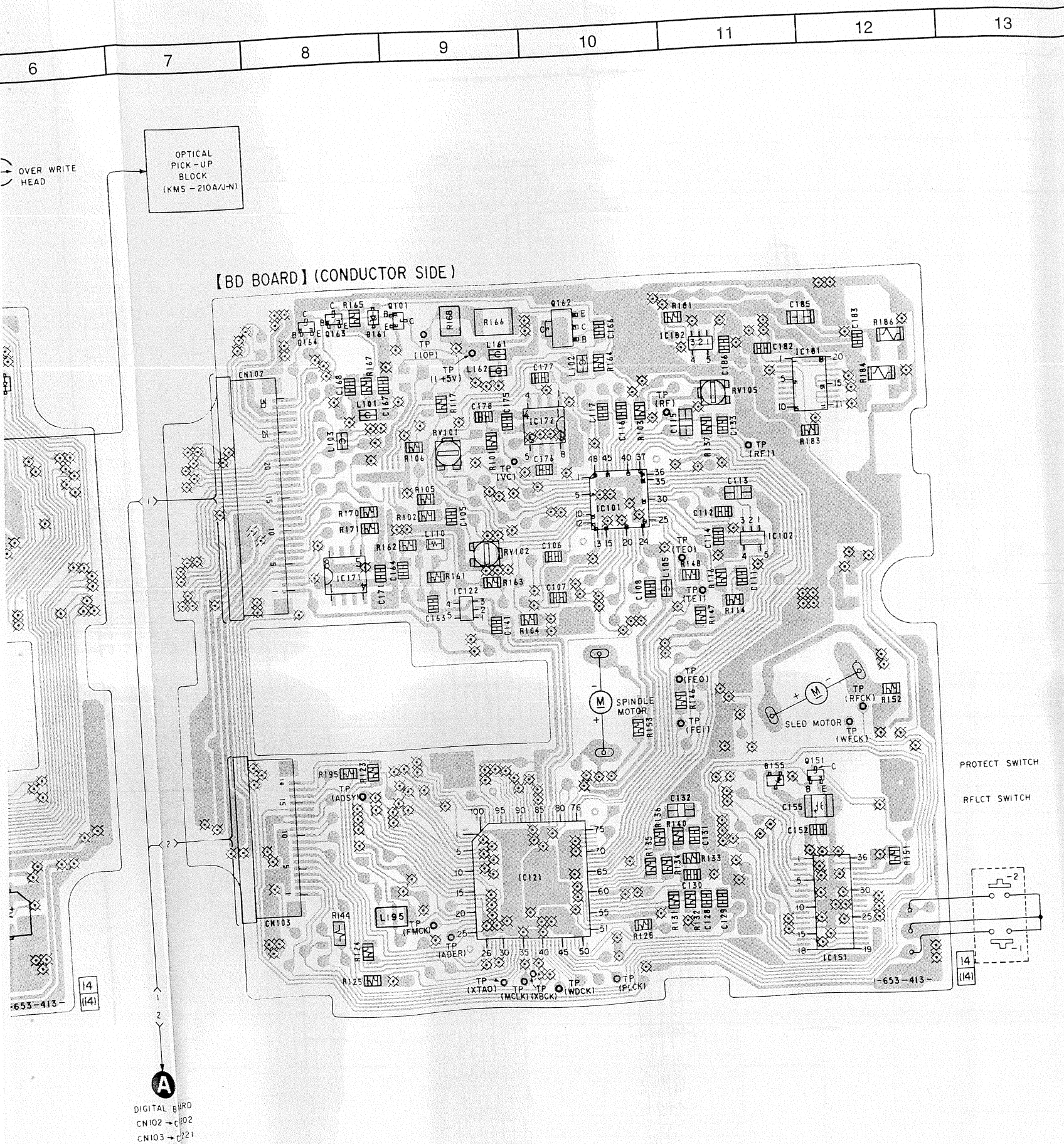
PC BOARD (Component side view)



Refer to the schematic diagram for the values of resistors and capacitors.

MECHANISM PCB (MBU-2)





• Semiconductor location

Pin. No.	Location
D101	C-6
D155	F-11
D161	B-8
D181	C-2
D133	C-2
IC101	D-10
IC102	D-11
IC121	F-9
IC122	D-9
IC151	G-12
IC171	D-8
IC172	C-10
IC181	C-12
IC182	C-11
IC191	G-5
Q101	B-9
Q151	F-12
Q162	B-10
Q163	B-8
Q164	B-8
Q181	C-1
Q182	C-1

Note :

- — : Wire from parts side.
- — : Wire from foil side.
- ⊗ : Through hole.
- ■ : Viewpoint foil side.

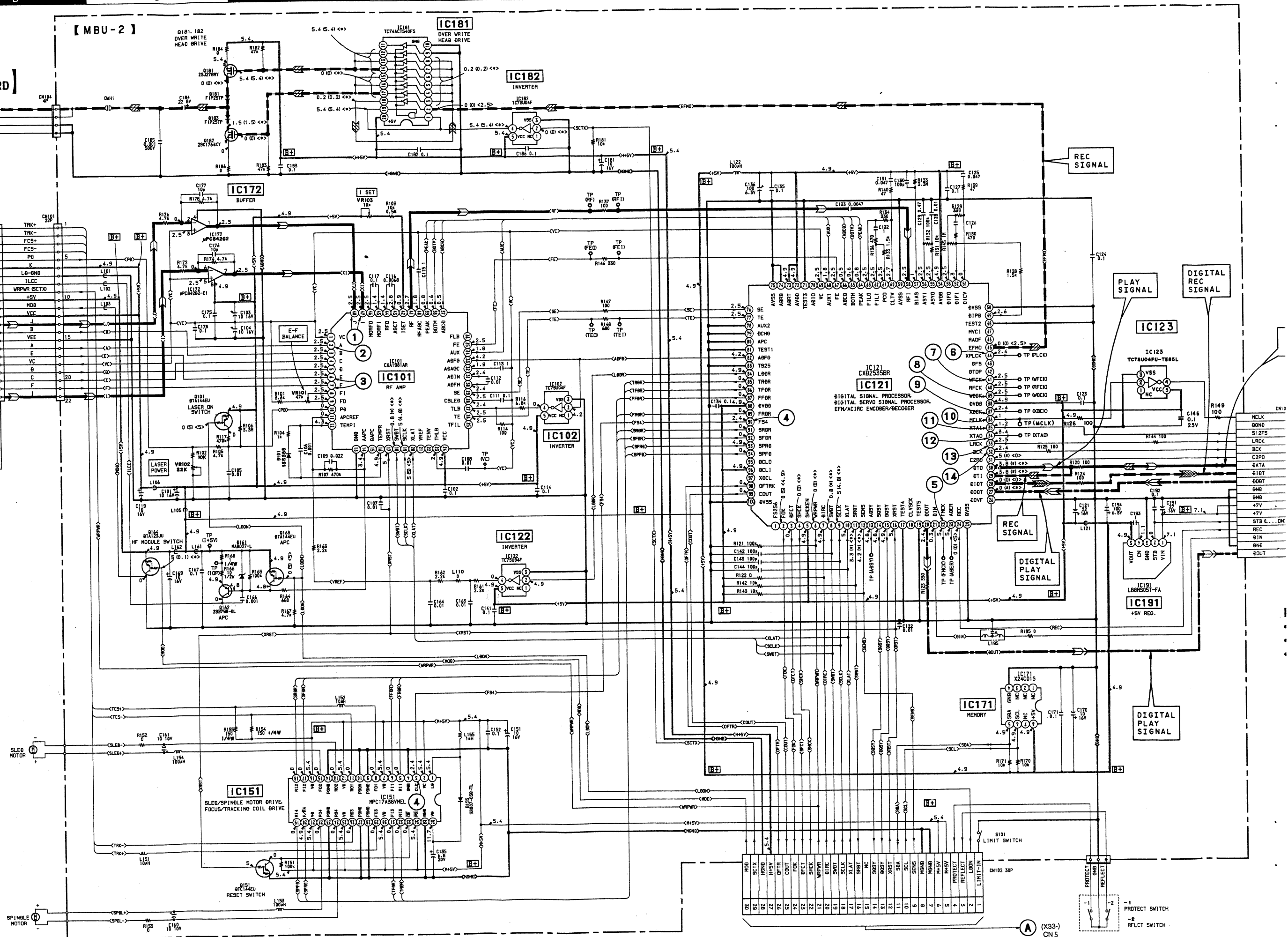
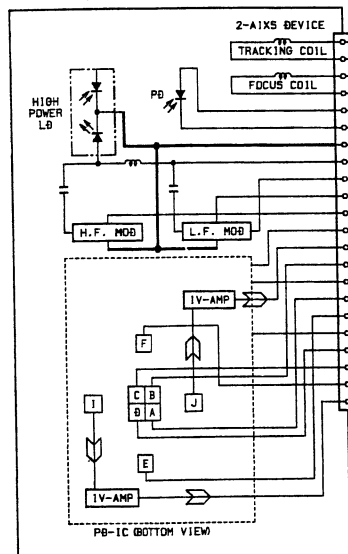
Re No. RV in pc board shows as VR in schematic diagram and list.

Refer to the schematic diagram for the values of resistors and capacitors.

【MBU-2】

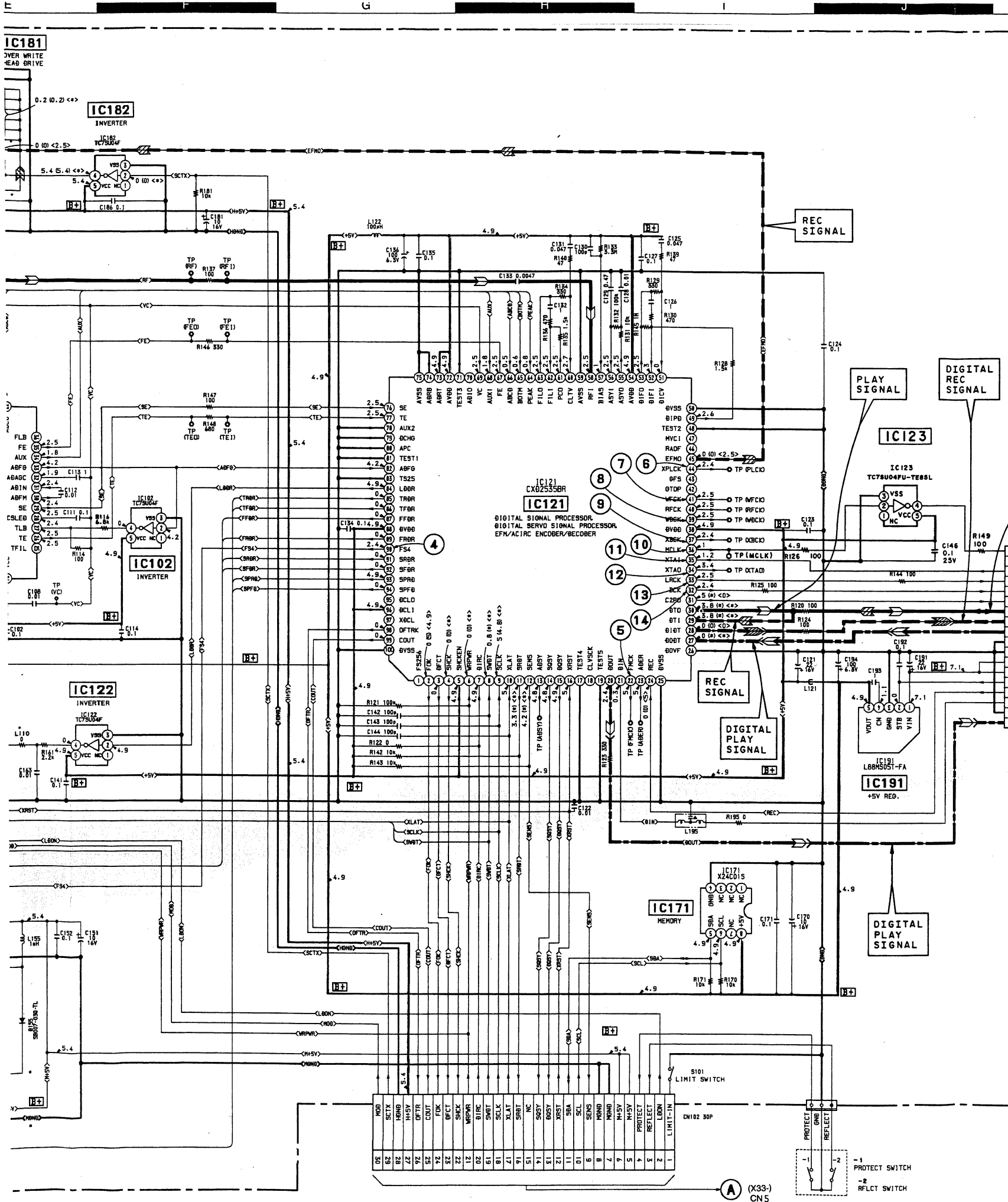
【OWH FLEXIBLE BOARD】

OPTICAL PICK-UP BLOCK (KMS-210A/J-N)



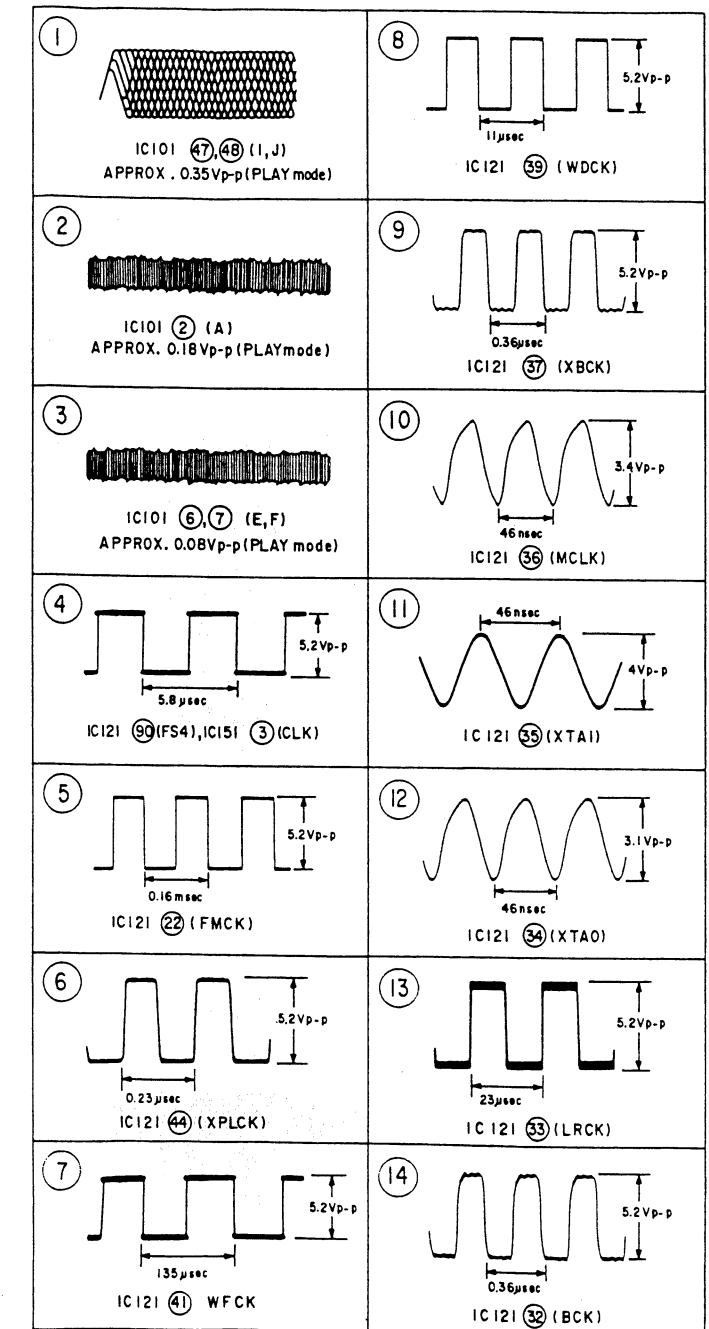
(X33) CN5

PROTECT SWITCH
REFLECT SWITCH



- Note :**
- △ : Built in parts.
 - B+ : B+
 - Adjustment
 - NON : STOP
 - () : Playback
 - < > : Record
 - * : Measurement impassible.
 - ▶ : Playback
 - ▶▶ : Playback (Digital)
 - ▨ : Record
 - ▨▨ : Record (Digital)

• Wave form

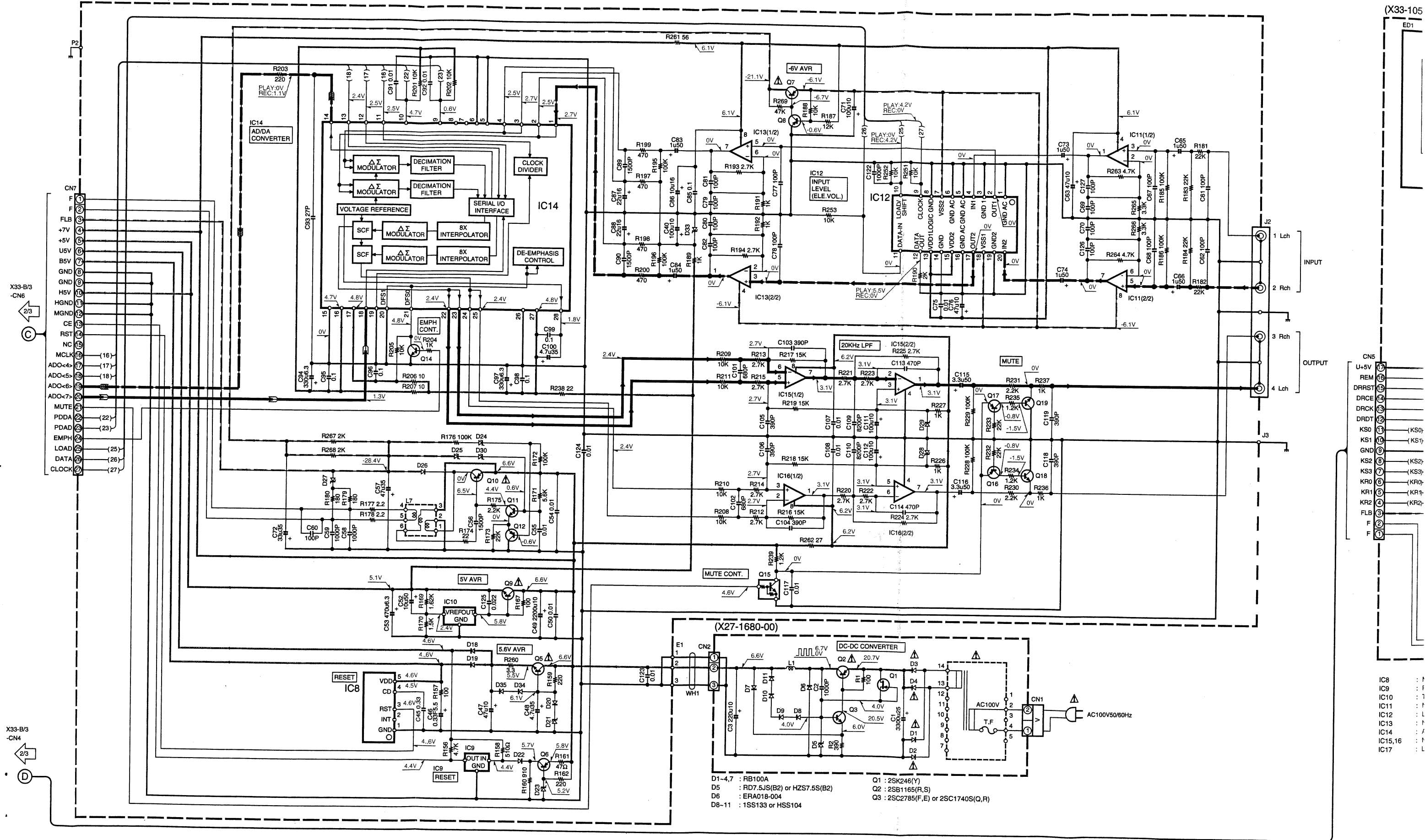


DM-SA7
KENWOOD

Y22-4560-00

(X33-105X-XX) (A/3)

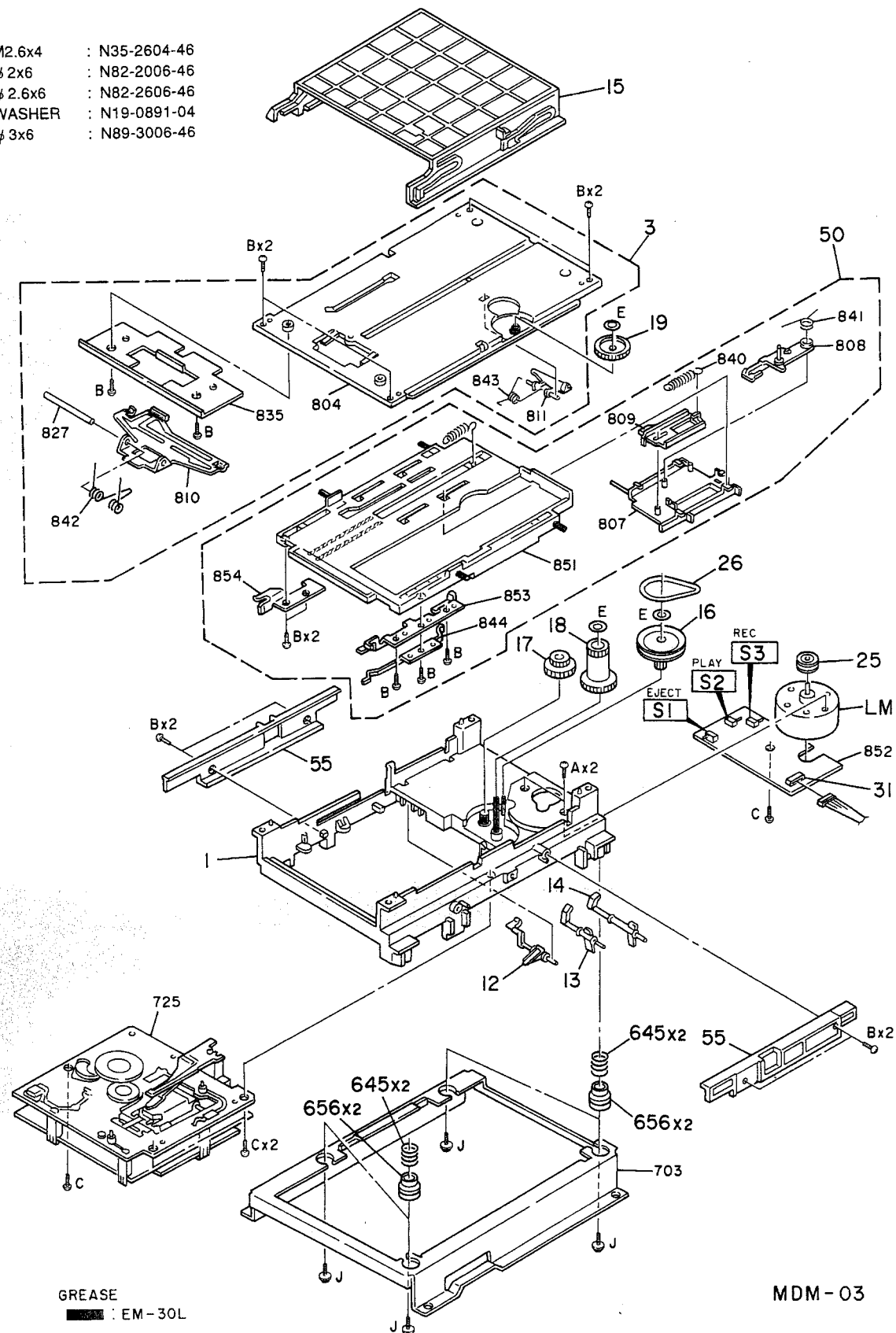
(X33-105



DM-SA7 DM-SA7

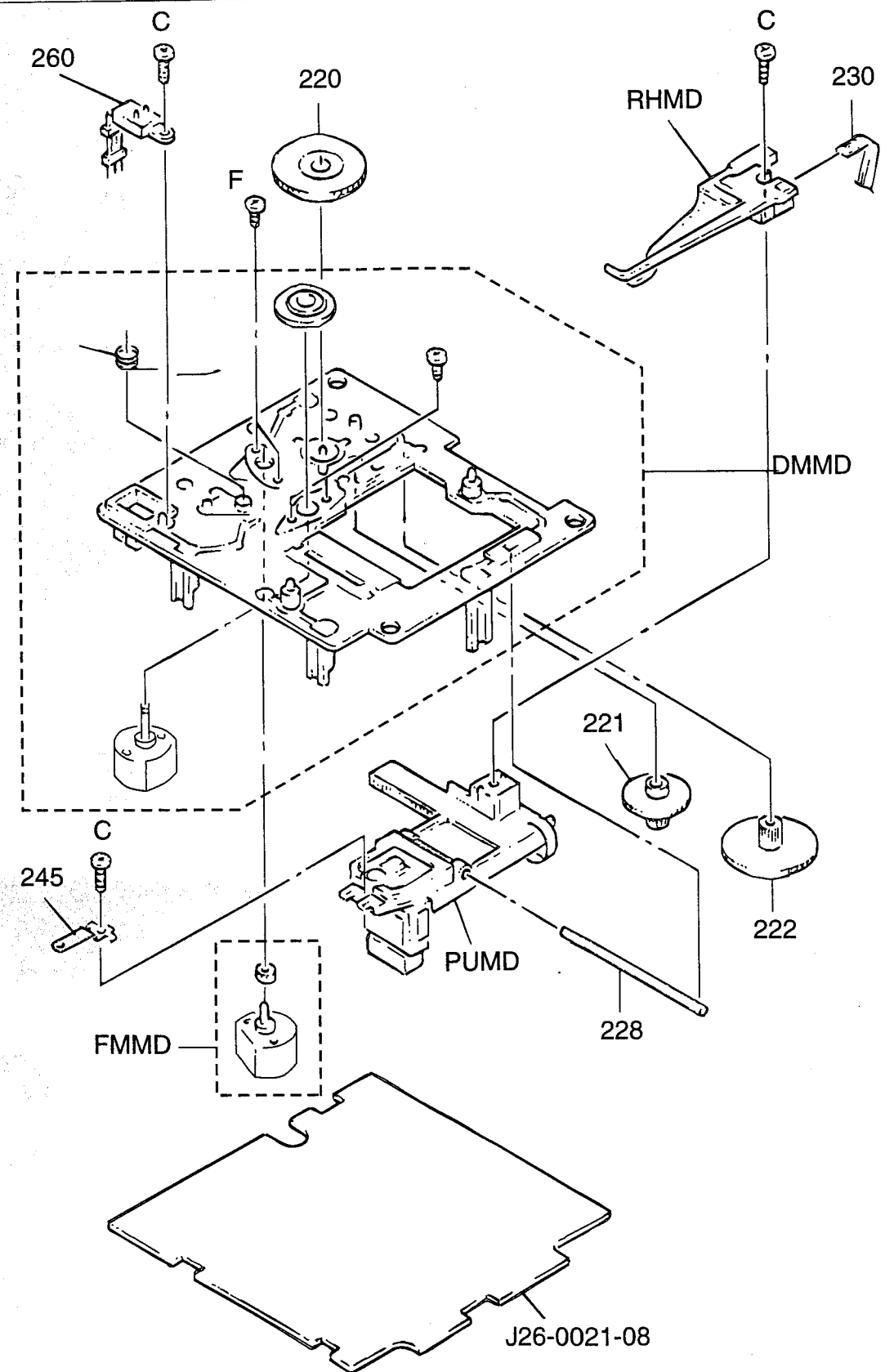
EXPLODED VIEW (MD MECHANISM)

A M2.6x4 : N35-2604-46
 B ϕ 2x6 : N82-2006-46
 C ϕ 2.6x6 : N82-2606-46
 E WASHER : N19-0891-04
 J ϕ 3x6 : N89-3006-46



Parts with the exploded numbers larger than 700 are not supplied. 29

EXPLODED VIEW (MD MECHANISM)

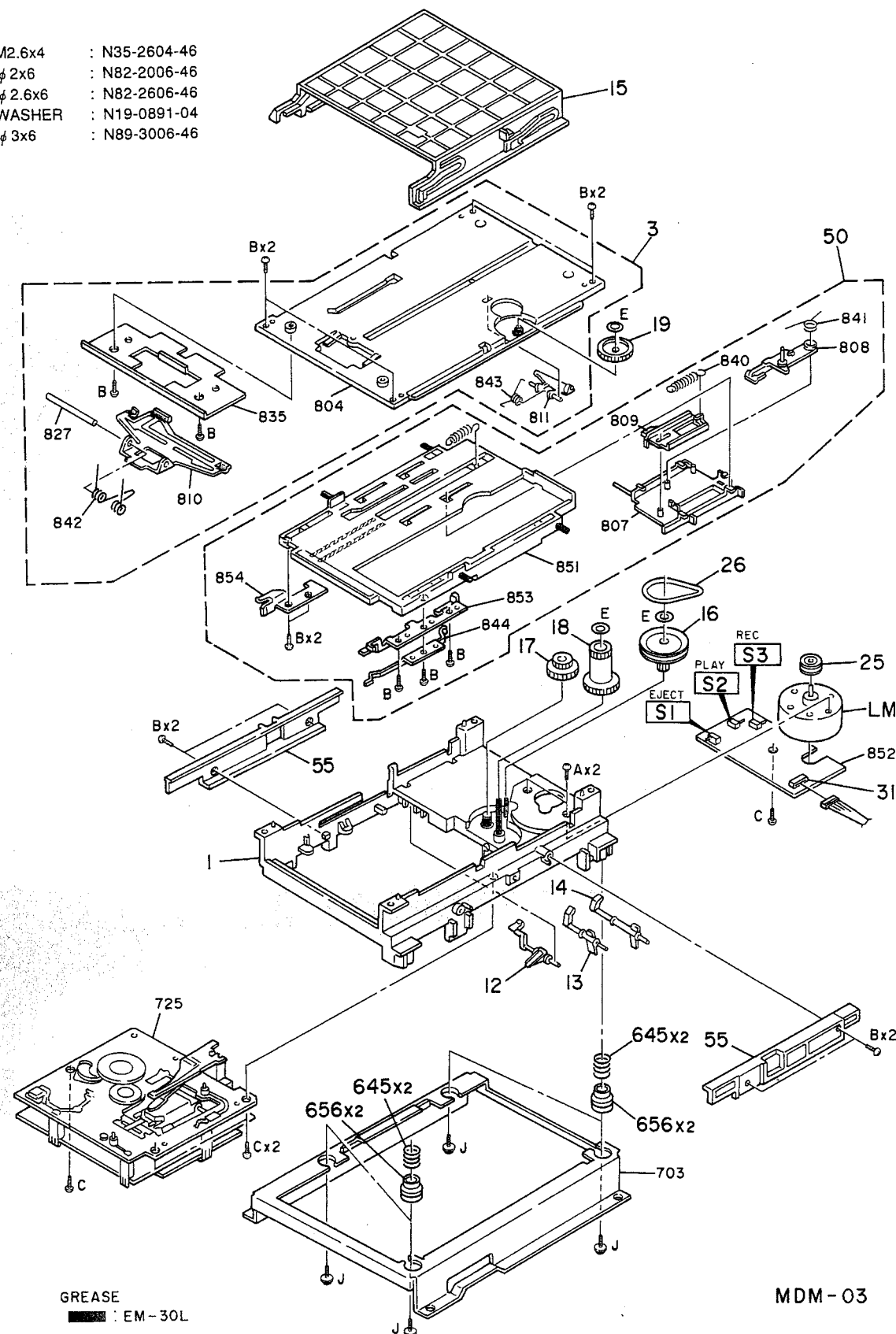


Parts with the exploded numbers larger than 700 are not supplied.

DM-SA7 DM-SA7

EXPLODED VIEW (MD MECHANISM)

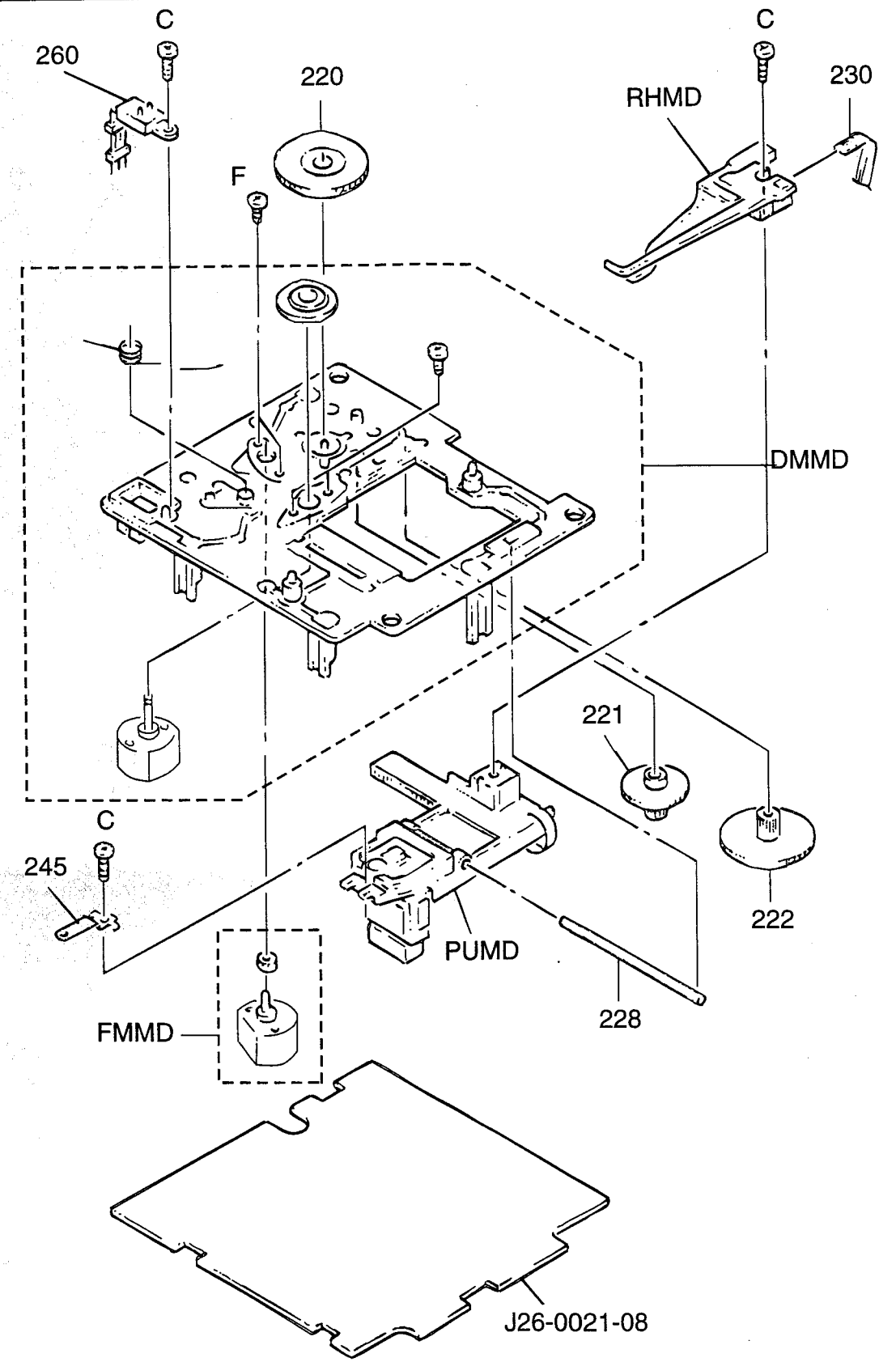
- A M2.6x4 : N35-2604-46
 B ϕ 2x6 : N82-2006-46
 C ϕ 2.6x6 : N82-2606-46
 E WASHER : N19-0891-04
 J ϕ 3x6 : N89-3006-46



MDM-03

Parts with the exploded numbers larger than 700 are not supplied.

EXPLODED VIEW (MD MECHANISM)



DM-MG7

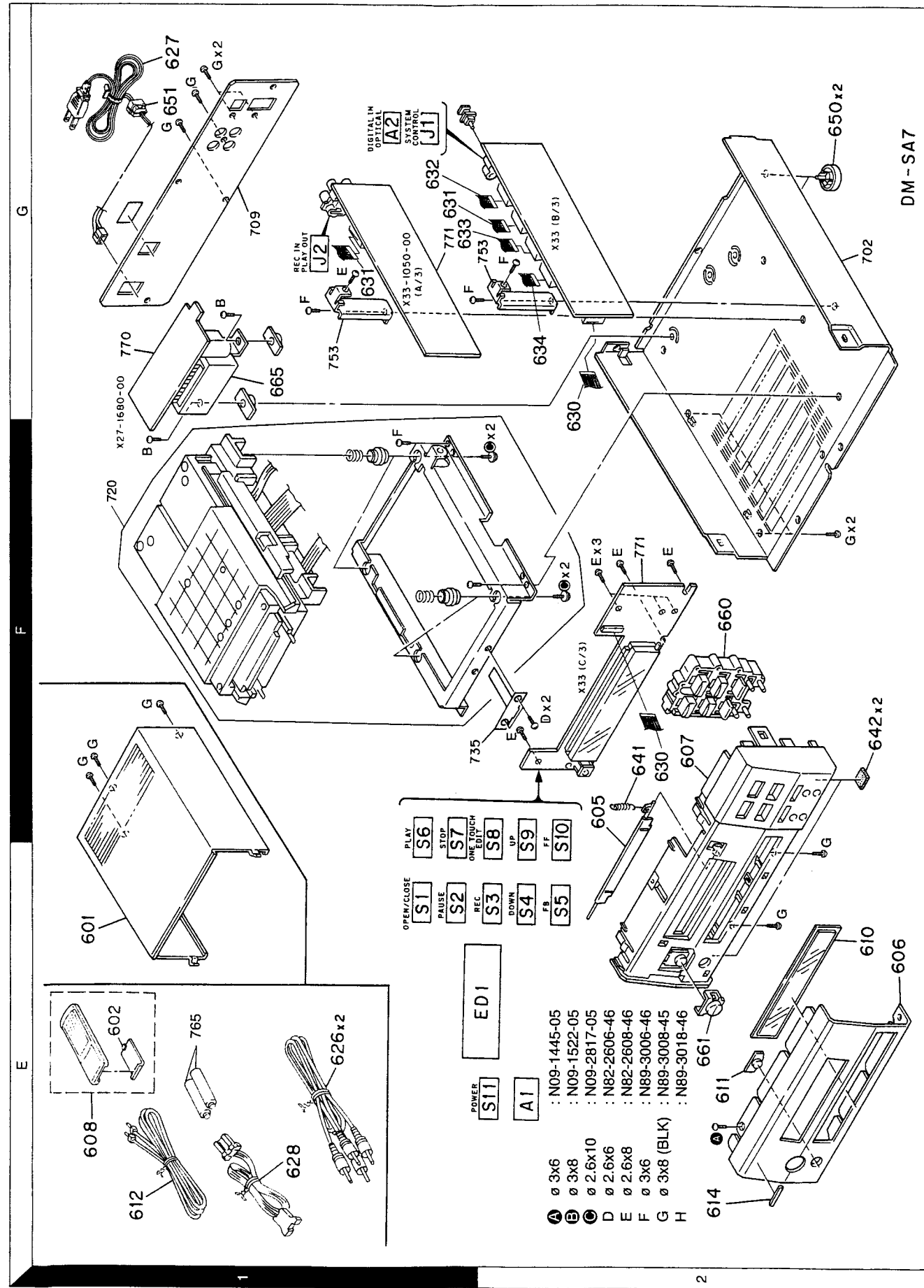
Parts with the exploded numbers larger than 700 are not supplied.

DM-SA7

DM-SA7

EXPLODED VIEW (UNIT)

PARTS LIST



Parts with the exploded numbers larger than 700 are not supplied.

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

Ref. No	Add-ress	New Parts	Parts No.	Description	Desti-nation	Re-marks
C2			CQ93FMG1H102J	MYLAR ELECTRO		
C3			CE04LW1A221M	220UF 10WV	J	
CN1			E40-4245-05	PIN ASS'Y (2P)		
CN2			E40-4293-05	FLAT CABLE CONNECTOR (3P)		
L1			L33-0394-05	CHOKE COIL		
D1 -4			RB100A	DIODE		
D5			HZ57.5S(B2)	ZENER DIODE		
D6			RD7.5JS(B2)	ZENER DIODE		
D7			ERA081-004	DIODE		
D8 -11			RB100A	DIODE		
O1			HSS104	DIODE		
O2			1SS133	FET		
O3			2SB1165(R,S)	TRANSISTOR		
O3			2SC1740S(Q,H)	TRANSISTOR		
O3			2SC2785(F,E)	TRANSISTOR		
MD UNIT (X33-1050-00)						
C1			CK73FB1H103K	CHIP C		
C2			CK73FB1E104K	CHIP C		
C3			CE04LW1A101M	ELECTRO		
C4			CK73FB1E104K	CHIP C		
C5			CK73FB1H103K	CHIP C		
C6			CK73FB1H103K	CHIP C		
C7			CK73FSL1H221J	CHIP C		
C8			CK73FSL1H680J	CHIP C		
C9			CK73FSL1H470J	CHIP C		
C10			CK73FSL1H470J	CHIP C		
C11 -13			CK73FB1E104K	CHIP C		
C14			CK73FB1E104K	CHIP C		
C15			CC73FCH1H040C	CHIP C		
C16			CC73FCH1H070D	CHIP C		
C17			CK73FB1H103K	CHIP C		
C18			CE04LW0J221M	ELECTRO		
C19			CK73FB1E104K	CHIP C		
C20			CK73FB1E104K	CHIP C		
C21			CE04HW1E100M	NP-ELEC		
C22			CK73FB1E104K	CHIP C		
C23			CK73FB1E104K	CHIP C		
C24			CK73FB1E104K	CHIP C		
C25			CK73FB1E104K	CHIP C		
C26			CK73FB1E104K	CHIP C		
C27			CK73FB1H102K	CHIP C		
C28			CK73FB1E104K	CHIP C		
C29			CK73FB1E104K	CHIP C		
C30			CE04LW1A101M	ELECTRO		
C31			CK73FB1E104K	CHIP C		
C32			CK73FB1E104K	CHIP C		
C33			CE04LW1A101M	ELECTRO		
C34			CK73FB1H103K	CHIP C		
C35			CK73FB1H103K	CHIP C		
C36			CK73FB1H103K	CHIP C		
C37			CK73FB1H103K	CHIP C		
C38			CK73FB1H103K	CHIP C		
C39			CK73FB1H103K	CHIP C		
C40			CK73FB1H103K	CHIP C		
C41			CK73FB1H103K	CHIP C		
C42			CK73FB1E104K	CHIP C		
C43			CK73FB1E104K	CHIP C		
C44			CK73FB1E104K	CHIP C		
C45			CK73FB1E104K	CHIP C		
C46			CK73FB1E104K	CHIP C		
C46			C90-3623-05	BACK UP		
POWER UNIT (X27-1680-00)						
C1			CE04LW1E332M	ELECTRO		
C1			CE04LW1E332M	ELECTRO		

L : Scandinavia
Y : PX(Far East, Hawaii)
V : AAFES(Europe)
K : USA
P : Canada
T : Europe
X : Australia
R : Mexico
G : Germany
M : Other Areas

Δ indicates safety critical components.

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

Ref. No	Add-ress	New Parts	Parts No.	Description	Desti-nation	Re-marks
DM-SA7						
601			A01-3363-01	METALLIC CABINET		
602			A09-0356-05	BATTERY COVER (RC-M0701)		
605			A29-0821-04	PANEL		
606			A60-0918-03	PANEL		
607			A60-0931-11	PANEL		
608			A70-1070-05	REMOTE CONTROLLER (RC-M0701)		
610			B10-2241-03	FRONT GLASS		
611			B12-0290-04	INDICATOR		
612			B19-1529-05	OPTICAL FIBER		
614			B43-0303-04	KENWOOD BADGE		
			B46-0310-03	WARRANTY CARD		
			B60-2851-00	INSTRUCTION MANUAL		
			B60-2852-00	INSTRUCTION MANUAL		
			B60-2853-00	INSTRUCTION MANUAL		
			B60-2854-00	INSTRUCTION MANUAL		
			B60-2855-00	INSTRUCTION MANUAL		
			B60-2856-00	INSTRUCTION MANUAL		
626			E30-0615-05	AUDIO CORD		
627			E30-2592-15	AC POWER CORD		
628			E30-2721-05	AC POWER CORD		
630			E30-2628-05	CORD WITH CONNECTOR		
			E35-1469-05	FLAT CABLE (17P/CN4-CN5)		
631			E35-1470-05	FLAT CABLE (27P/CN6-CN7)		
632			E35-1471-05	WIRE HARNESS(6P/CN3-MECHA-CN1)		
633			E35-1472-05	FLAT CABLE(30P/CN2-MBU2-CN102)		
634			E35-1473-05	FLAT CABLE(18P/CN1-MBU2-CN103)		
			F20-1490-04	INSULATING BOARD		
641			G01-3907-04	EXTENSION SPRING		
642			G11-2700-04	CUSHION		
			G01-3823-04	COMPRESSION SPRING		
			G11-2262-04	SOFT TAPE		
			H10-7193-02	POLYSTYRENE FOAMED FIXTURE(F)		
			H10-7194-12	PACKING FIXTURE		
			H12-2300-14	PROTECTION BAG		
			H25-0336-04	PROTECTION BAG		
			H25-1579-04	PROTECTION BAG		
			H25-1581-04	PROTECTION BAG		
			H50-1961-14	ITEM CARTON CASE		
			H50-2025-14	ITEM CARTON CASE		
650			J02-0370-05	FOOT		
651			J42-0083-05	POWER CORD BUSHING		
			J02-1136-04	INSULATOR		
			J19-5745-04	UNIT HOLDER		
			K29-6372-03	KNOB		
660			K29-6398-04	KNOB		
661			L07-2236-05	POWER TRANSFORMER		
665						
POWER UNIT (X27-1680-00)						
C1			CE04LW1E332M	ELECTRO		
C1			CE04LW1E332M	ELECTRO		

L : Scandinavia
Y : PX(Far East, Hawaii)
V : AAFES(Europe)
K : USA
P : Canada
T : Europe
X : Australia
R : Mexico
G : Germany
M : Other Areas

Δ indicates safety critical components.

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

Ref. No	Add- ress	New Parts	Parts No.	Description	Re- marks
C47			CE04LW1A470M	ELECTRO	
C48			CE04LW1V477M	ELECTRO	
C49			CE04LW1A222M	ELECTRO	
C50			CK73FB1H103K	CHIP C	
C52			CE04LW1H100M	ELECTRO	
C53			CE04LW0471M	ELECTRO	
C54, 55			CK73FB1H103K	CHIP C	
C56			CK73FB1H152K	CHIP C	
C57			CE04LW1V470M	ELECTRO	
C58, 59			CK73FB1H102K	CHIP C	
C60 -62			CC73FCH1H101J	CHIP C	
C63			CE04LW1A470M	ELECTRO	
C65, 66			CE04LW1H010M	ELECTRO	
C67 -70			CC73FCH1H101J	CHIP C	
C71			CE04LW1A101M	ELECTRO	
C72			CE04LW1V330M	ELECTRO	
C73, 74			CE04LW1H010M	ELECTRO	
C75			CK73FB1H103K	CHIP C	
C76			CE04LW1A470M	ELECTRO	
C77 -82			CC73FCH1H101J	CHIP C	
C83, 84			CE04LW1H010M	ELECTRO	
C85			CK73FB1E104K	CHIP C	
C86			CE04LW1C100M	ELECTRO	
C87, 88			CE04LW1C220M	ELECTRO	
C89, 90			CK73FB1H152K	CHIP C	
C91, 92			CK73FB1H103K	CHIP C	
C93			CC73FSL1H270J	CHIP C	
C94			CE04LW0331M	ELECTRO	
C95, 96			CK73FB1E104K	CHIP C	
C97			CE04LW0331M	ELECTRO	
C98, 99			CO93FMG1H104J	MYLAR	
C100			CE04LW1V477M	ELECTRO	
C101, 102			CO93FMG1H681J	MYLAR	
C103-106			CO93FMG1H391K	MYLAR	
C107, 108			CO93FMG1H103J	MYLAR	
C109, 110			CO93FMG1H822J	MYLAR	
C111, 112			CE04LW1A101M	ELECTRO	
C113, 114			CO93FMG1H471J	MYLAR	
C115, 116			CE04LW1H3R3M	ELECTRO	
C117			CK73FB1H103K	CHIP C	
C118, 119			CO93FMG1H391K	MYLAR	
C120-122			CK73FB1H102K	CHIP C	
C123, 124			CK73FB1H103K	CHIP C	
C125			CK73FB1H223K	CHIP C	
C126, 127			CC73FCH1H101J	CHIP C	
CN1			E40-9914-05	FLAT CABLE CONNECTOR	
CN2			E40-9915-05	FLAT CABLE CONNECTOR	
CN3			E40-3264-05	PIN ASSY	
CN4, 5		*	E40-9988-05	FLAT CABLE CONNECTOR	
CN6, 7			E40-4952-05	FLAT CABLE CONNECTOR	
J1			E08-0311-05	RECTANGULAR RECEPTACLE	
J2			E63-0120-05	PHONO JACK	
J3		*	F10-1062-04	SHIELDING PLATE	

L : Scandinavia
Y : PX(Far East, Hawaii)
Y : AAFFES(Europe)
K : USA
T : Europe
X : Australia
P : Canada
E : Europe
M : Other Areas
R : Mexico
G : Germany
Indicates safety critical components.

PARTS LIST

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

Ref. No	Add- ress	New Parts	Parts No.	Description	Re- marks
E2			J19-5689-13	HOLDER	
F1, 2		*	J11-0808-05	WIRE CLAMPER	
			J21-5845-04	MOUNTING HARDWARE	
L1, 2			L79-1216-05	LINE FILTER	
L3			L40-4701-31	SMALL FIXED INDUCTOR	
L4			L40-2291-31	SMALL FIXED INDUCTOR	
L5, 6			L79-1216-05	LINE FILTER	
L7			L19-0076-05	TRANSFORMER FOR CONVERTER	
X1			L77-2150-05	CRYSTAL RESONATOR(45M,3RD)	
X2			L78-0280-05	RESONATOR	
X3			L78-0284-05	RESONATOR	
R1			RK73FB2A470J	CHIP R	
R2 -7			RK73FB2A101J	CHIP R	
R8			RK73FB2A473J	CHIP R	
R9 -13			RK73FB2A104J	CHIP R	
R14 -16			RK73FB2A221J	CHIP R	
R17			RK73FB2A100J	CHIP R	
R18, 19			RK73FB2A101J	CHIP R	
R20			RK73FB2A102J	CHIP R	
R21			RK73FB2A103J	CHIP R	
R22			RK73FB2A102J	CHIP R	
R23			RK73FB2A103J	CHIP R	
R24 -34			RK73FB2A104J	CHIP R	
R35			RK73FB2A103J	CHIP R	
R36 -39			RK73FB2A104J	CHIP R	
R40			RK73FB2A103J	CHIP R	
R41 -45			RK73FB2A104J	CHIP R	
R46 -48			RK73FB2A102J	CHIP R	
R49			RK73FB2A223J	CHIP R	
R50			RK73FB2A104J	CHIP R	
R51			RK73FB2A222J	CHIP R	
R52			RK73FB2A103J	CHIP R	
R53 -60			RK73FB2A104J	CHIP R	
R61 -64			RK73FB2A101J	CHIP R	
R65			RK73FB2A472J	CHIP R	
R66 -68			RK73FB2A104J	CHIP R	
R69			RK73FB2A101J	CHIP R	
R70			RK73FB2A912J	CHIP R	
R71			RK73FB2A123J	CHIP R	
R72			RK73FB2A153J	CHIP R	
R73 -75			RK73FB2A103J	CHIP R	
R76			RK73FB2A102J	CHIP R	
R77			RK73FB2A223J	CHIP R	
R78 -80			RK73FB2A104J	CHIP R	
R81 -88			RK73FB2A101J	CHIP R	
R89 -94			RK73FB2A103J	CHIP R	
R95 -105			RK73FB2A104J	CHIP R	
R106, 107			RK73FB2A223J	CHIP R	
R108-110			RK73FB2A104J	CHIP R	
R111-114			RK73FB2A102J	CHIP R	
R115-132			RK73FB2A104J	CHIP R	
R133-138			RK73FB2A103J	CHIP R	
R139-141			RK73FB2A471J	CHIP R	
R142-146			RK73FB2A104J	CHIP R	

L : Scandinavia
Y : PX(Far East, Hawaii)
Y : AAFFES(Europe)
K : USA
T : Europe
X : Australia
P : Canada
E : Europe
M : Other Areas
R : Mexico
G : Germany
Indicates safety critical components.

DM-SA7

DM-SA7

PARTS LIST

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

Ref. No	Add- ress	New Parts	Parts No.	Description	Re- marks
R147			RK73FB2A102J	CHIP R	
R148			RK73FB2A331J	CHIP R	
R149, 150			RK73FB2A104J	CHIP R	
R151			RK73FB2A331J	CHIP R	
R152-155			RK73FB2A103J	CHIP R	
R156			RK73FB2A472J	CHIP R	
R157			RK73FB2A101J	CHIP R	
R158, 159			RK73FB2A221J	CHIP R	
R160			RK73FB2A511J	CHIP R	
R161			RK73FB2A470J	CHIP R	
R162			RK73FB2A221J	CHIP R	
R167			RK73FB2A101J	CHIP R	
R169			R92-1840-05	1.62K	
R170		*	R92-1839-05	1.5K	
R171		*	RK73FB2A562J	CHIP R	
R172			RK73FB2A104J	CHIP R	
R173			RK73FB2A223J	CHIP R	
R174			RK73FB2A220J	CHIP R	
R175			RK73FB2A222J	CHIP R	
R176			RK73FB2A104J	CHIP R	
R177, 178			RK73FB2A2R2J	CHIP R	
R179, 180			RK73FB2A181J	CHIP R	
R181-184			RK73FB2A223J	CHIP R	
R185, 186			RK73FB2A104J	CHIP R	
R187			RK73FB2A123J	CHIP R	
R188			RK73FB2A103J	CHIP R	
R189			RK73FB2A102J	CHIP R	
R190			RK73FB2A202J	CHIP R	
R191, 192			RK73FB2A102J	CHIP R	
R193, 194			RK73FB2A272J	CHIP R	
R195, 196			RK73FB2A104J	CHIP R	
R197-200			RK73FB2A471J	CHIP R	
R201, 202			RK73FB2A103J	CHIP R	
R203			RK73FB2A221J	CHIP R	
R204			RK73FB2A102J	CHIP R	
R205			RK73FB2A103J	CHIP R	
R206, 207			RK73FB2A100J	CHIP R	
R208-211			RK73FB2A103J	CHIP R	
R212-215			RK73FB2A272J	CHIP R	
R216-219			RK73FB2A153J	CHIP R	
R220, 225			RK73FB2A272J	CHIP R	
R226, 227			RK73FB2A102J	CHIP R	
R228, 229			RK73FB2A104J	CHIP R	
R230, 231			RK73FB2A223J	CHIP R	
R232, 233			RK73FB2A223J	CHIP R	
R234, 235			RK73FB2A122J	CHIP R	
R236, 237			RK73FB2A102J	CHIP R	
R238			RK73FB2A102J	CHIP R	
R239			RK73FB2A122J	CHIP R	
R240-245			RK73FB2A104J	CHIP R	
R246-248			RK73FB2A102J	CHIP R	
R251-253			RK73FB2A103J	CHIP R	
R254-259			RK73FB2A3R3J	CHIP R	
R260			RK73FB2A360J	CHIP R	
R261			RK73FB2A560J	CHIP R	

L : Scandinavia
Y : PX(Far East, Hawaii)
Y : AAFFES(Europe)
K : USA
T : Europe
X : Australia
P : Canada
E : Europe
M : Other Areas
R : Mexico
G : Germany
Indicates safety critical components.

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

7

Ref. No	Add-ress	New Parts	Parts No.	Description	Desti-nation	Re-marks
Q12			2SA1576(R,S)	TRANSISTOR		
Q14			2SC1740S(Q,R)	TRANSISTOR		
Q15			2SC2785(F,E)	TRANSISTOR		
Q16			DTC124EUA	DIGITAL TRANSISTOR		
Q17			UN5212	DIGITAL TRANSISTOR		
Q18, 19			2SA1576(R,S)	TRANSISTOR		
A1			2SD1450(S,T)	TRANSISTOR		
A2			* W02-2571-05	OPTIC RECEIVING MODULE		
			* W02-1181-05	OPTIC RECEIVING MODULE		
MECHANISM PCB (MBU-2)						
C101			C92-0132-08	TANTAL	10UF	
C102			CK73FF1E104Z	CHIP C	0.10UF	Z
C103, 104			C92-0132-08	TANTAL	10UF	
C105			CK73FB1H103K	CHIP C	0.010UF	K
C106			CK73FB1H102J	CHIP C	1000PF	J
C107, 108			CK73FB1H103K	CHIP C	0.010UF	K
C109			CK73FB1E104K	CHIP C	0.022UF	K
C110			CK73FB1E104K	CHIP C	0.10UF	K
C111			CK73FB1H103K	CHIP C	0.010UF	K
C112			CK73FB1H103K	CHIP C	0.010UF	K
C113			CK73EB1C105K	CHIP C	1.0UF	K
C114			CK73FF1E104Z	CHIP C	0.10UF	Z
C115			CK73EB1C105K	CHIP C	0.10UF	K
C116			CK73FB1H682K	CHIP C	6800PF	K
C117			CK73FB1E104K	CHIP C	0.10UF	K
C119			C92-0132-08	TANTAL	10UF	
C121			C92-0038-05	CHIP-ELE	22UF	16WV
C122, 124			CK73FB1H103K	CHIP C	0.010UF	K
C125			CK73FF1E104Z	CHIP C	0.10UF	Z
C126			CK73EB1H473K	CHIP C	0.047UF	K
C127			CK73FF1E104Z	CHIP C	0.10UF	Z
C128			CK73FB1H103K	CHIP C	0.010UF	K
C129			CK73FF1E104Z	CHIP C	0.47UF	Z
C130			CK73FSL1H101J	CHIP C	100PF	J
C131			CK73FB1H473K	CHIP C	0.047UF	K
C132			CK73EB1C105K	CHIP C	1.0UF	K
C133			CK73FB1H472K	CHIP C	4700PF	K
C134, 135			CK73FF1E104Z	CHIP C	0.10UF	Z
C136			C92-0048-05	ELECTRO	100UF	6.3WV
C141			CK73FF1E104Z	CHIP C	0.10UF	Z
C142-144			CC73FSL1H101J	CHIP C	100PF	J
C146			CK73FF1E104Z	CHIP C	0.10UF	Z
C151			C92-0132-08	TANTAL	10UF	
C152			CK73FF1E104Z	CHIP C	0.10UF	Z
C155			C92-0133-08	TANTAL	6.8UF	
C160, 161			C92-0041-05	CHIP-ELE	10UF	10WV
C163, 164			CK73FB1H103K	CHIP C	0.010UF	K
C166			CK73FCH1H102J	CHIP C	1000PF	J
C167, 168			CK73FF1E104Z	CHIP C	0.10UF	Z
C169, 170			C92-0132-08	TANTAL	10UF	
C171			CK73FF1E104Z	CHIP C	0.10UF	Z
C175			CC73FSL1H100J	CHIP C	10PF	J
C176, 177			CK73FF1E104Z	CHIP C	0.10UF	Z
C178				CHIP C	0.10UF	Z

L : Scandinavia K : USA P : Canada R : Mexico
Y : PX(Far East, Hawaii) T : Europe E : Europe G : Germany
Y : AAFES(Europe) X : Australia M : Other Areas
Δ indicates safety critical components.

DM-SA7

PARTS LIST

8

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

Ref. No	Add-ress	New Parts	Parts No.	Description	Desti-nation	Re-marks
C181			C92-0132-08	TANTAL	10UF	
C182, 183			CK73FF1E104Z	CHIP C	0.10UF	Z
C184			C92-0134-08	CHIP-ELE	22UF	
C185			C91-1529-08	CHIP C	1000PF	
C186			CK73FF1E104Z	CHIP C	0.10UF	Z
C191			C92-0038-05	CHIP-ELE	22UF	16WV
C192			CK73FF1E104Z	CHIP C	0.10UF	Z
C193			CK73FF1C105Z	CHIP C	1.0UF	Z
C194			C92-0048-05	ELECTRO	100UF	6.3WV
CN101	3D		E40-9818-08	FLAT CABLE CONNECTOR(22P)		
CN102	3D		E40-9868-05	FLAT CABLE CONNECTOR(30P)		
CN103	3D		E40-4967-05	FLAT CABLE CONNECTOR(18P)		
CN104	3D		E40-9819-08	FLAT CABLE CONNECTOR(4P)		
L101-103			L92-0048-08	CHIP FERRITE		
L106			L92-0048-08	CHIP R	0 OHM	
L110			R92-0670-05	CHIP FERRITE		
L121			L92-0048-08	CHIP FERRITE		
L122			L33-0511-08	SMALL FIXED INDUCTOR(100UH)		
L151, 152			L33-0512-08	SMALL FIXED INDUCTOR(10UH)		
L153, 154			L33-0511-08	SMALL FIXED INDUCTOR(100UH)		
L155			L33-0400-08	SMALL FIXED INDUCTOR(1000UH)		
L161, 162			L92-0048-08	CHIP FERRITE		
L195			L92-0047-08	CHIP FERRITE		
R101			RK73FB2A332J	CHIP R	3.3K	J
R102			RK73FB2A103J	CHIP R	10K	J
R103			RK73FB2A1002D	CHIP R	10K	D
R104			RK73FB2A102J	CHIP R	1K	J
R105			RK73FB2A472J	CHIP R	4.7K	J
R106			RK73FB2A335J	CHIP R	3.3K	J
R107			RK73FB2A474J	CHIP R	470K	J
R114			RK73FB2A101J	CHIP R	100	J
R116			RK73FB2A682J	CHIP R	6.8K	J
R117			RK73FB2A474J	CHIP R	470K	J
R120			RK73FB2A101J	CHIP R	100	J
R121			RK73FB2A104J	CHIP R	100K	J
R122			R92-0670-05	CHIP R	0 OHM	
R123			RK73FB2A331J	CHIP R	330	J
R124, 125			RK73FB2A101J	CHIP R	100	J
R128			RK73FB2A152J	CHIP R	1.5K	J
R129			RK73FB2A331J	CHIP R	330	J
R130			RK73FB2A471J	CHIP R	470	J
R131			RK73FB2A103J	CHIP R	10K	J
R132			RK73FB2A104J	CHIP R	100K	J
R133			RK73FB2A335J	CHIP R	3.3M	J
R134			RK73FB2A331J	CHIP R	330	J
R135			RK73FB2A152J	CHIP R	1.5K	J
R136			RK73FB2A471J	CHIP R	470	J
R137			RK73FB2A101J	CHIP R	100	J
R139, 140			RK73FB2A470J	CHIP R	47	J
R142, 143			RK73FB2A103J	CHIP R	10K	J
R144			RK73FB2A101J	CHIP R	100	J
R145			RK73FB2A105J	CHIP R	1.0M	J
R146			RK73FB2A331J	CHIP R	330	J
R147			RK73FB2A101J	CHIP R	100	J

L : Scandinavia K : USA P : Canada R : Mexico
Y : PX(Far East, Hawaii) T : Europe E : Europe G : Germany
Y : AAFES(Europe) X : Australia M : Other Areas
Δ indicates safety critical components.

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

9

Ref. No	Add-ress	New Parts	Parts No.	Description	Desti-nation	Re-marks
R148			RK73FB2A681J	CHIP R	680	J
R149			RK73FB2A101J	CHIP R	100	J
R151			RK73FB2A104J	CHIP R	100K	J
R152, 153			R92-0670-05	CHIP R	0 OHM	
R154, 155			R92-1827-08	METAL GLAZE RESISTOR 150 1/4W		
R161-163			RK73FB2A222J	CHIP R	2.2K	J
R164			RK73FB2A681J	CHIP R	680	J
R165			RK73FB2A104J	CHIP R	100K	J
R166			R92-1826-08	METAL GLAZE RESISTOR 10 1/2W		
R167			RK73FB2A472J	CHIP R	4.7K	J
R168			R92-1825-08	METAL GLAZE RESISTOR 1 1/4W		
R170, 171			RK73FB2A103J	CHIP R	10K	J
R172			RK73FB2A472J	CHIP R	4.7K	J
R174			RK73FB2A472J	CHIP R	4.7K	J
R176			RK73FB2A472J	CHIP R	4.7K	J
R178			RK73FB2A472J	CHIP R	4.7K	J
R181			RK73FB2A103J	CHIP R	10K	J
R182, 183			RK73FB2A473J	CHIP R	47K	J
R184			R92-0679-05	CHIP R	0 OHM	
R186			R92-0679-05	CHIP R	0 OHM	
R195			R92-0670-05	CHIP R	0 OHM	
R261			RK73FB2A101J	CHIP R	100	J
VR101			R32-0021-08	SEMI FIXED VARIABLE R(47K)		
VR102			R12-3168-05	SEMI FIXED VARIABLE R(22K)		
VR105			R12-3167-05	SEMI FIXED VARIABLE R(10K)		
S101			S68-0053-08	PUSH SWITCH		
D101			1SS355	DIODE		
D155			S8007-03Q-TL	DIODE		
D181			MA8027-L	DIODE		
D183			F1P25TP	DIODE		
IC101			CXA1981AR	IC(RF AMP)		
IC102			TC7SU04F	IC(INVERTER)		
IC121			CXD2535BR	IC(DSP&DSP)		
IC122			TC7SU04F	IC(INVERTER)		
IC123			TC7SU04FU-TE85L	IC(COMS CONVERTOR)		
IC151			MPC17A38VMEL	IC(MOTOR DRIVER)		
IC171			X24C01S	IC(EEPROM)		
IC172			UPC842G2	IC(BUFFER)		
IC181			TC7AAGT540FS	IC(OVER WRITE HEAD DRIVE)		
IC182			TC7SU04F	IC(INVERTER)		
IC191			L88MS05T-FA	IC(POWER SUPPLY)		
Q101			DTA144EU	TRANSISTOR		
Q151			DTA144EU	TRANSISTOR		
Q162			2SB798-DL	TRANSISTOR		
Q163			DTA144EU	TRANSISTOR		
Q164			DTA123JU	TRANSISTOR		
Q161			2SK178MY	TRANSISTOR		
Q182			2SK1764KY	TRANSISTOR		
MD MECHANISM (D40-1479-05)						
1	2A		A10-3231-03	CHASSIS ASSY		
3	1B		A11-1074-02	SUB CHASSIS ASSY		
DM	2D		A10-3258-08	CHASSIS ASSY		

L : Scandinavia K : USA P : Canada R : Mexico
Y : PX(Far East, Hawaii) T : Europe E : Europe G : Germany
Y : AAFES(Europe) X : Australia M : Other Areas
Δ indicates safety critical components.

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

10

Ref. No	Add-ress	New Parts	Parts No.	Description	Desti-nation	Re-marks
12	3B		D10-3593-04	ARM (EJECT)		
13	3B		D10-3594-04	ARM (PLAY)		
14	2B		D10-3595-04	ARM (REC)		
15	1B		D10-3596-12	SLIDER (LIFT)		
16	2B		D13-1712-04	GEAR (PULLEY)		
17	2B		D13-1714-04	GEAR (INNER)		
18	2B		D13-1715-04	GEAR (F)		
19	1B		D13-1716-04	GEAR (IDLER)		
20	1C		D13-1721-08	GEAR (SL-A)		
21	2D		D13-1722-08	GEAR (SL-B)		
22	2D		D13-1723-08	GEAR (SL-C)		
25	2B		D15-0386-04	PULLEY (MOTOR)		
26	2B		D16-0390-03	BELT		
28	2D		D21-1822-08	SHAFT		
30	1D		E35-1312-08	FLAT CABLE(4P) (MBU-2 CN104)		
31	2C		E40-3264-05	PIN ASSY(6P) (MECHA LD)		
45	2C		G02-1082-08	FLAT SPRING (OP)		
50	1B		J19-5602-12	HOLDER ASSY (CARTRIDGE)		
51	3D		J26-0031-08	PRINTED WIRING BOARD ASSY		
55	2A, 3B		J90-0837-04	GUIDE (SLIDER)		
AE	1B, 2B		N19-0891-04	FLAT WASHER		
60	1C		S68-0054-08	PUSH SWITCH		
S1 -3	2B		S40-1139-05	PUSH SWITCH		
FM	2C		T42-0819-08	MOTOR ASSY (FEED)		
LM	2B		T42-0811-05	DC MOTOR		
PU	2D		T25-0046-08	OPTICAL PICKUP HEAD (KSM-210A)		
RH	1D		T30-0011-08	RECORD HEAD (RF322-74A)		

L : Scandinavia K : USA P : Canada R : Mexico
Y : PX(Far East, Hawaii) T : Europe E : Europe G : Germany
Y : AAFES(Europe) X : Australia M : Other Areas
Δ indicates safety critical components.

SPECIFICATIONS

[Format]

System.....Minidisc digital audio system
 Laser.....Semiconductor laser
 Recording method.....Field modulation overwrite method
 Audio compression.....ATRAC (Adaptive Transform Acoustic Coding)
 Playing ratio.....Approx. 400 rpm ~900 rpm (CLV)

[D/A conversion]

D/A conversion.....1 Bit
 Over sampling.....8 fs (353.8 kHz)

[A/D converter]

A/D converter.....4 th order sigma-delta conversion
 Sampling frequency.....44.1kHz

[Digital audio efficiency]

Frequency response (playback mode).....8 Hz ~ 20 kHz, ± 1.0 dB
 Signal to noise ratio (playback mode).....More than 91 dB
 Dynamic range (playback mode).....More than 90 dB
 Total harmonic distortion (1 kHz, playback mode).....Less than 0.009%
 Channel separation (1 kHz, playback mode).....More than 88 dB
 Wow & Flutter.....Less than unmeasurable limit
 Analog input sensitivity/input impedance.....More than 300 mV/22 k Ω
 Analogue output level /impedance.....1.2 V/3.2 k Ω
 Digital input
 Optical.....-15 dBm ~-21 dBm (wave length 660 nm)

[General]

Power consumption.....14 W
 Dimension.....W : 200 mm
 H : 75 mm
 D : 250 mm
 Weight (net).....2.1 kg